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DESIGN AND IMPLEMENTATION OF AN OPERATIONAL DATABASE FOR THE FLEET AREA CONTROL AND SURVEILLANCE FACILITY, NAS NORTH ISLAND, SAN DIEGO, CALIFORNIA

by

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March 1989

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This thesis develops an Oracle-based relational database system for use by FACSFAC. The system consists of two applications. In the scheduling application, inputs from various sources are compiled, allowing both a powerful query capability and the production of a weekly schedule of activities for the facilities and personnel assigned to FACSFAC. The exercise results application provides an automated method of gathering and querying pertinent tactical employment and range utilization data for required weekly, monthly and quarterly reports.

The prototype system greatly facilitates the storage, query and reporting functions of the organization and promotes increased efficiency in day-to-day operations.

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The Fleet Area Control and Surveillance Facility FACSFAC located at North Island, San Diego, currently performs its data collection, storage and processing functions manually. Expected expansion of the scope of operations at FACSFAC will overwhelm the present system.

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I. INTRODUCTION

A. BACKGROUND

The Fleet Area Control and Surveillance Facility (FACSFAC) is located aboard Naval Air Station North Island, San Diego, California. It is a command of the U.S. Navy whose current mission is to provide specialized antisubmarine warfare (ASW) and electronic warfare (EW) training support at the Southern California Offshore Range (SCORE) to the operational forces of the Commander in Chief, Pacific Fleet (CINCPACFLT). In executing its assigned mission, FACSFAC schedules and operates the range, provides for simulated and/or actual submarine targets, monitors the performance of units exercising on the range, and collects and analyzes tactical data from fleet units conducting training on the range. When weapons and/or simulated targets are involved, FACSFAC provides for the retrieval of those assets at the completion of the exercise. Additionally, FACSFAC is tasked with the safe and orderly conduct of all exercises undertaken on the various SCORE ranges.

The Southern California ASW Range (SOAR) provides "an instrumented, three-dimensional, in-air and underwater tracking range" [Ref. 1:pg. 1] for use by west coast air, surface and submarine commands. Presently, the 112 square mile range is capable of simultaneously tracking up to eight surface and air platforms and four in-water vehicles. Planned upgrades to the range include expansion to 600 square miles in area, with improved track resolution and tracking capability.

The EW range currently provides training to west coast surface ships through the use of a noise jammer simulation subsystem and a temporary radar signal simulator (RSS-19)

[Ref. 1:pg. 1]. Training opportunities for the west coast air communities are also being explored. Future expansion of the EW range capabilities will include threat radar simulation and participant response monitoring. These upgrades should benefit air participants and attract additional surface units.

As SCORE continues to evolve, additional ranges and equipment will become available to support training exercises in ASW, EW, Weapons Impact Scoring, No-Drop Laser Scoring and Naval Gunfire Support (NGFS). A future integrated Range Operations Center (ROC) will accommodate a wide range of exercise scenarios involving multiple warfare areas.

B. STATEMENT OF PROBLEM

The proposed expansion of range size and data collection capabilities will overwhelm the manual data handling techniques of the current FACSFAC management information system. Not only will the scheduling process become more complicated with the development of additional ranges and the increased utilization of those ranges, but the quantity of tactical data collected during the exercises is expected to double. Clearly, the present manual system cannot be expected to cope with this growth. Lack of an automated database causes an inordinate amount of time to be spent manually searching files for data required for the various reports. Optional data manipulation functions are not being performed by the Program Engineers due to the tedium associated with the file searches. These optional functions, consisting mainly of tactical employment comparisons, could be of significant use to the training departments of the client commands.

C. SCOPE

The implementation of an automated database to gather and store schedule and exercise results data and to create an exercise schedule is just one facet of the integrated management information system envisioned by FACSFAC. The ultimate goal is the creation of the Southern California Range Asset Management Network (SCRAMNET), comprised of workstations and shared peripherals to create an integrated information resources system for the SCORE. The SCRAMNET will consist of three major components: database applications, the hardware/operating system, and text/graphics.

The database applications component, called the Southern California Range Asset Management Database (SCRAMBASE), is divided into an Administration database (ABASE) module, an Equipment database (EBASE) module, and an Operations database (OBASE) module.

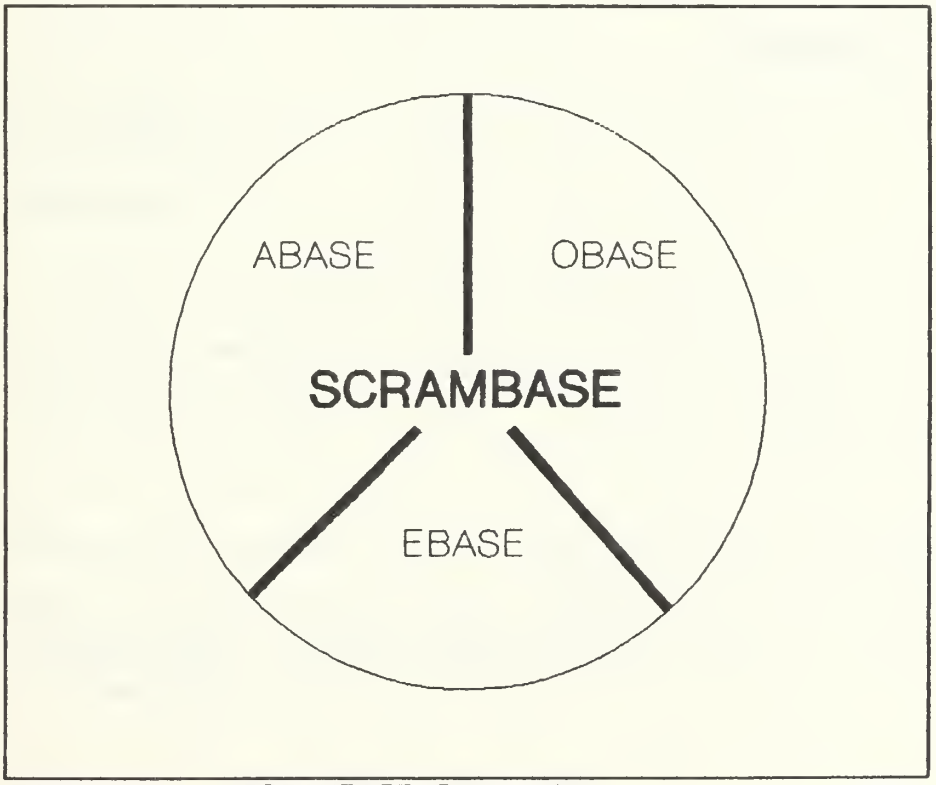


Figure 1.1 SCRAMBASE Concept

The OBASE module is comprised schedule and exercise data necessary to create a weekly schedule and generate required reports. The prototype system designed by this study will perform the first three functions, and in doing so will also make available all data necessary for accomplishment of the fourth.

In essence, two distinct but interrelated applications will be created. The first application will perform those functions of the Scheduler related to the gathering and input of data into a weekly facilities and personnel employment schedule. The final product of this application will be a printed schedule of weekly activities. The second application will provide the means for the Program Engineers and Operations Analysts to effect the collection and storage of data pertaining to the exercises conducted on the ranges. Although no printed reports will be produced by the prototype system, all data required for those reports will be stored in the database.

D. METHODOLOGY

Systems analysis is basically a three phase process designed to gather and analyze facts pertaining to the existing system, with the ultimate goal of improving that system through better procedures and techniques.

During the **study phase**, information is gathered relative to the capabilities and deficiencies of the present system. Specific objectives critical in developing an understanding of the system are:

- Identify all knowledge workers who use or are affected by the current system.
- Identify the purpose, goals, objectives and policies of the current information system, and analyze the extent to which the mission is being achieved.

- Identify the information system functions provided by the current system and analyze the extent to which these functions support the knowledge workers and the mission.
- Separate the current information system into its components and analyze how these components interact to provide the current information resources. [Ref. 2:pg. 182]

The second phase of systems analysis is that of **requirements definition.** The two primary goals of this stage are:

- Identification of the objects the user needs to track and definition of their structure.
- Determination of the functional components of each application that will use the database. [Ref. 3:pg. 88].

User requirements will be discussed in Chapter II.

The third, and final phase of systems analysis is the **design phase**, which consists of both logical design (covered in Chapter III) and the implementation of the system (discussed in Chapter IV).

E. FEASIBILITY

1. Cost

The implementation of the prototype system designed by this study will require a minimum of additional funds. Equipment needed for the system is presently on hand, and the time and effort required to train system operators is expected to be negligible. The limited training requirements are primarily due to the users' existing knowledge of the Oracle database system, the Users' Manual and the designed-in simplicity of the user interface.

2. Technical

The only technical limitations imposed by the prototype system are those associated with the selection of

Professional ORACLE as the designated database management system to be employed. The system requirements for use of ORACLE consist of:

- Compaq 386, IBM PC/AT, Personal System/2 Models 50, 60 and 80, or 100% compatibles.
- DOS 3.1 or later version, or OS/2.
- Up to 6MB of local hard disk to accomodate all software components and demonstration databases.
- 640 KB of regular RAM plus 896 KB of extended RAM. [Ref. 4:pg. 10].

The design, development, documentation and testing of the prototype system was done on IBM-compatible AT machines; implementation and further testing will be done at FACSFAC on an IBM Model 80. All system requirements listed above are currently available at FACSFAC, along with a technical support engineer who is intimately familiar with the ORACLE database management system.

3. Schedule

The prototype system for the OBASE component of SCRAMBASE is being developed concurrently with, yet independently of, the other two components. The latter impose no restrictions on OBASE development, nor do they more than associatively depend on its development. In that the SCRAMNET plan is a long-term process, it also imposes no scheduling constraints on the development of this system. Thus, from the schedule standpoint, feasibility is assumed.

II. USER REQUIREMENTS

The determination of user needs, in terms of both data and functional requirements, is the second step of systems analysis. First, in order to understand better the needs of the FACSFAC organization, the study phase examines its current method of data collection and storage.

A. PRESENT SYSTEM

The present system used by FACSFAC was seen as being two separate, but interacting applications. Figures 2.1 and 2.2 graphically portray the two applications. In those diagrams, a rectangle represents a source/sink, an oval represents a function being performed, an arrow shows the flow of data and information, and the two parallel lines represent a data bank or database.

The first application consists of those functions necessary for gathering and input of various data in order to create weekly and monthly schedules of activities for FACSFAC facilities and personnel and DYNACORP personnel. The scheduler receives the Quarterly Employment Schedule from the Naval Undersea Warfare Engineering Station (NUWES) containing the training needs of the various client communities. He then creates a monthly planner for internal use only, and uses it as a guide for developing the upcoming weekly schedules. Using the monthly planner and asset availabilities from NUWES, the client users and the supporting commands, the scheduler generates individual exercise events linking FACSFAC facilities with the training requirements of the clients. FACSFAC and DYNACORP personnel are then matched with the exercise events, and a weekly activities schedule is thus created and distributed. Modifications to that

schedule are made as needed, based upon inputs from NUWES, the supporting commands and clients.

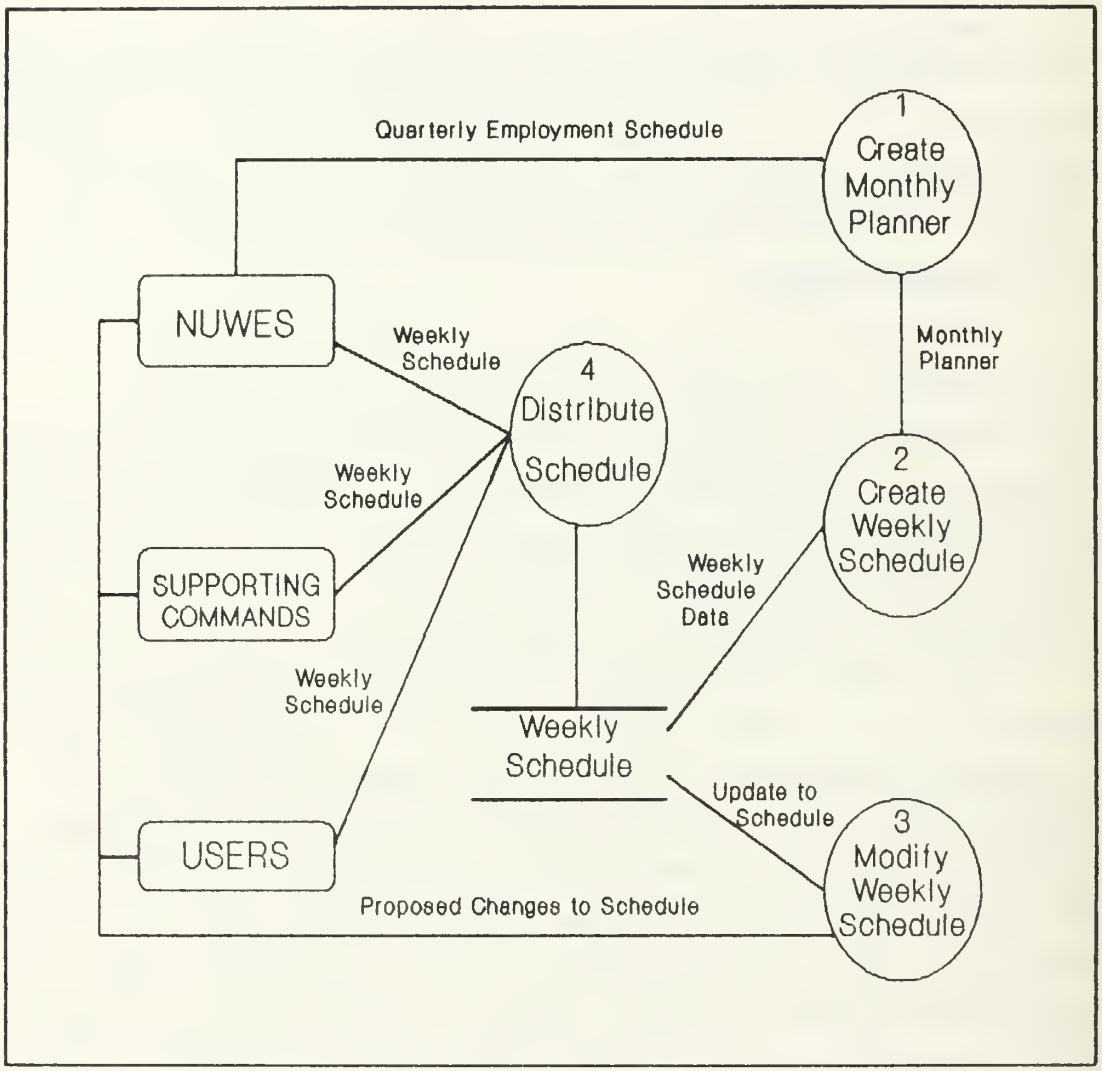


Figure 2.1 Current Scheduling System.

The second application consists of those activities involved in collecting post-exercise information for the purpose of generating required reports and performing analyses on the tactical employment data gathered during the exercise. In this application, the Program Engineer accumulates tactical data during the exercise from both personal

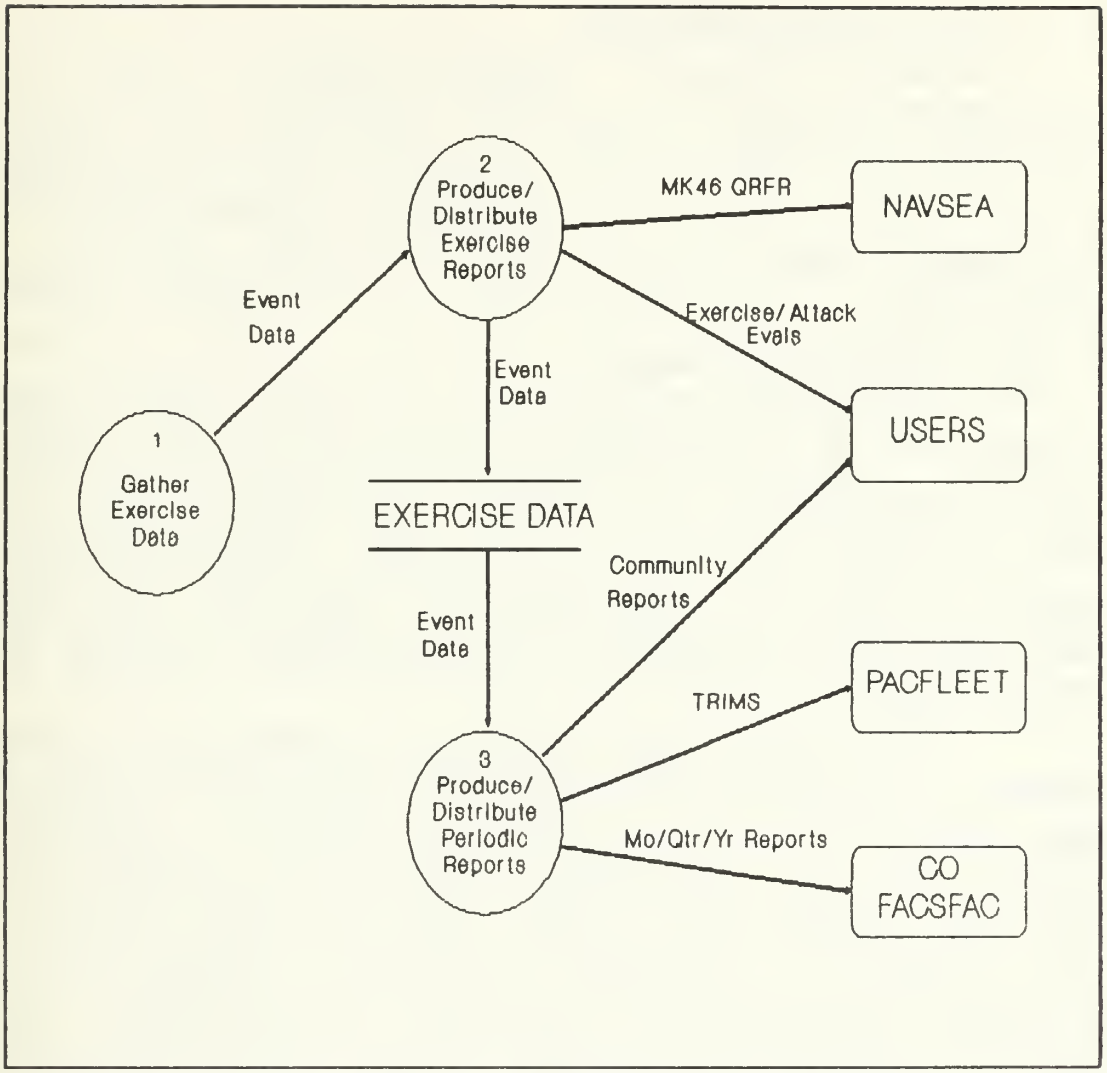


Figure 3.2 Current Exercise Results Function.

observation and inputs from the Operations Analyst, Operations Controller and range Safety Officer. These data are combined with data obtained from the client users during the event debrief to create an Exercise Summary document which is then filed, an Attack/Exercise Performance Evaluation, and a MK46 Rapid Feedback Firing Report, if applicable. The Operations Analyst periodically accesses the filed documents in order to produce assorted other required reports.

B. REQUIREMENTS DEFINITION

The second stage of systems analysis is that of **requirements definition**, wherein the determination is made as to exactly what the new system must do. These requirements consist of both the data objects which must be captured by the system, and the functions that the new system must be able to perform.

1. Data Requirements

System data requirements were determined through a series of interviews conducted with the prospective system users and management at FACSFAC. These requirements were then translated into objects, diagrams and specifications. Appendix A contains object diagrams, Appendix B the object specifications, and Appendix C the definition and other data of each domain.

In keeping with the scope of the project as described in Chapter I, the database system for FASCFAC is envisioned as being two primary applications: schedule and exercise results. The schedule application will store all data relevant to the schedule, but will not perform the actual scheduling. The second application, referred to as the results application, will store all the results of an particular event. In terms of a time line, scheduling is concerned with an event **before** it occurs, and exercise results is concerned with **post**-event analysis.

a. Schedule Application Objects

The schedule application stores the schedule in an easily updatable form to accommodate the many changes that occur during the scheduling process. This is accomplished by breaking the data down into the five entities with which the scheduler normally works: the exercise event itself, the brief, the users, the weapon and the target. These five entities are represented by corresponding objects of the same names. Of these five objects, the main one is

the EXERCISE object, since it contains, directly or indirectly, all the other objects. This is consistent with the view of the FACSFAC personnel who, in most instances, view the exercise as one entity, but at other times see each object as separate entities.

The exercise entity is represented by the **EXERCISE Object** which uniquely identifies an instance of an exercise (referred to as an event) by the Exercise Type and Event Number. Normally, the scheduler concatenates these two numbers to form one event identifier. The Exercise Type indicates the specific type of exercise to be run, such as a submarine torpedo exercise or an S-3 electronic warfare exercise. This data is important to the database because each exercise has unique information storage requirements. For example, electronic warfare exercises do not require weapons or targets, thus these objects need not be recorded as part of the EXERCISE object. The Event Number uniquely identifies an individual event within each exercise type. This number is a sequential number for each exercise type conducted during a given year. The EXERCISE object also contains general scheduling information concerning the event, such as date and times, personnel, and message requirements. Required exercise support, in the form of target and weapon recovery vehicles, is also identified in this object.

The **BRIEF Object** consists of information relevant to each briefing. Normally, there is a minimum of two briefs associated with each event: a pre-event brief and a post-event brief. The BRIEF object is used to create a Weekly Briefings Report to ensure not only that briefer knows when and where his briefings are to be held, but also to allow others to schedule the briefing room on an "as-available" basis. Each brief is identified by its title.

The **TARGET Object** contains information about the target(s) to be used during a given exercise. Creating this separate object ensures that the correct target parameters are being used for each exercise event. The TARGET object also contains the information needed to schedule the target launch vehicle(s). FACSFAC personnel view this as being a separate object, mainly to depict how the information about the targets is received. When the schedule is finalized, it is sent to the commands responsible for target support, and targets are provided to match the scheduled need. The number and type of targets needed for an event vary with the type of exercise being conducted and the number of participants in a particular event. Thus, the TARGET object can be multi-valued within the EXERCISE object. The TARGET object is identified by Exercise Type, Event Number and Target Designation.

The **USERS Object** contains those attributes describing the client users of the range. FACSFAC considers this as being an object because each client ship or squadron is a unique entity. In this application, at least one client command is associated with an exercise event and the USERS object describes those command characteristics relevant to an event. Each exercise event may have multiple users, to include the target itself if it is a ship or submarine. For aircraft squadrons the USER object also includes the number of aircraft from that command participating in the exercise event. The USERS object also contains the multi-valued WEAPON object. It is identified by Exercise Type, Event Number and Command Name.

The **WEAPON Object** is very similar to the TARGET object, in that it serves the function for weapons as the TARGET object does for targets. As the TARGET object is multi-valued within an EXERCISE object, the WEAPON object is multi-valued within a USERS object, with the normal number

of weapons being two for each participant in an event. The WEAPON object is identified by Weapon Type and Command Name.

b. Results Application Objects

The **RESULTS Object** is the main object of the exercise results application. It has the same identifier as the EXERCISE object with which it is associated. A great deal of the information in the results application is transferred from the scheduling application as default data. In addition to other attributes, the RESULTS object contains a multi-valued attribute, 'reason cancelled', which records the reason(s) why an exercise was either partially or entirely cancelled, and the range utilization hours lost for each given reason. The RESULTS object also contains all other objects that are part of the Results application.

The **PLATFORM Object** stores information about the individual unit that conducted an attack. The attacking unit can be either a ship, an aircraft or a submarine. Additionally, a unit may conduct multiple attacks on a target during an event. The PLATFORM object records usage of expendable ordnance (sonobuoys) and reasons that scheduled weapon drops were not made. This object is identified by Exercise Type, Event Number, Command Name and Side Number.

The **ATTACK Object**, contained within the PLATFORM object, is the heart of the results application. It records all information associated with each attack instance occurring for a given platform during a particular event. An instance of attack can be real, in which an exercise torpedo is actually expended, or simulated. The ATTACK object also records how well the platform performed in carrying out its attack(s). The information stored can be used later to evaluate the tactical proficiency of the platform, squadron and community. An attack is uniquely identified by a time of fire and the associated platform conducting the attack. Data recorded in each attack instance includes the accuracy of

the platform's solution at the time of the attack, the tactical employment of the platform at the time of attack, and whether or not the attack was successful. The ATTACK object also contains the multi-valued object WEAPON RESULTS.

The **WEAPON RESULTS Object** contains information pertaining to weapon performance and recovery, and individual instances are identified by the type (mk) and serial number of the weapon. The one WEAPON RESULTS attribute relevant to the ATTACK object is 'torpedo performance'. Should an exercise torpedo malfunction, the platform conducting the attack cannot be held responsible for the weapon missing the target. Thus, the torpedo's performance must be recorded in the ATTACK object. The WEAPON RESULTS object also contains the LOST object.

The **TARGET RESULTS Object** records data about the target used during the exercise event and its performance during the course of the exercise. This object is identified by the target designation, which is a serial number for a range target, or a ship designation or hull number if the target was an actual submarine or ship. If a ship or submarine is used as a target then the only target information that applies are track quality and sound augmentation information. The TARGET RESULTS object records the success or failure of target recovery operations, and also contains the LOST object, which stores data about lost torpedoes and targets.

The **LOST Object**, contained within the TARGET RESULTS and WEAPON RESULTS objects, records information pertaining to lost torpedoes and/or targets. It is considered separate from the WEAPON RESULTS and TARGET RESULTS objects because its occurrence is so rare (perhaps three or four times a year). Each instance is identified by the weapon type (mk) and serial number, or target designation and serial number. The LOST object is associated with a

particular event, thus other needed information for that object can be obtained from other objects of that event.

2. Functional Requirements

The objects described above reflect the users' view of what must be captured in the new system. The functional requirements specify the actual database application requirements of the system, and are portrayed graphically in the data flow diagrams (DFD) in Appendix D.

a. Schedule Application

The functional requirements of the schedule application consist of creating an exercise event and deleting/modifying an exercise event. The term "exercise event" as used here means both the Exercise object and its associated objects (Brief, User, Weapon and Target). The creation and modification/deletion of an exercise are shown DFD (A) and (B), respectively. In creating a new event, the scheduler gathers data (objects) from the Program Manager, the Program Engineer, NUWES and the Supporting Commands. This information, combined with the monthly planning schedule stored in the O-Base database, is used to create a single, unique exercise event (object). The scheduler forwards exercise events for an entire week, in the form of a tentative weekly schedule, to the Range Manager for review and approval. Any modifications to an event by the Range Manager are sent back to the scheduler for change and are re-submitted for approval. The approved weekly schedule is returned to the scheduler who distributes it and issues a Weekly Briefings Report, depicting all scheduled briefs for the week, including times, locations and briefing officers.

In the second part of the schedule application, the scheduler receives recommended changes to and deletions from events in the weekly schedule. These recommendations come from the Program Manager, the Program Engineer, the client User Commands, NUWES and the Supporting

Commands and are forwarded to the Range Manager for approval. Upon receipt of approval, the scheduler issues an updated weekly schedule and a modified Weekly Briefings report reflecting the changes.

b. Exercise Results Application

The third DFD portrays the functional requirements of the Exercise Results application, which consist of those processes necessary to gather and store exercise results data. This includes not only the Result object, but also the Platform, Attack, Weapon Result, Target Result and Lost objects. These data can then be used for user performance evaluations and for the creation of periodic and aperiodic reports. Data contained in the Exercise event and stored in the O-Base database are retrieved by a clerk and combined with post-exercise data from the O-Base database (Results Object) to create an Exercise Summary, which is passed to the Program Engineer (PE) for review and approval. Also passed to the PE is a list of scheduled exercise events in the database which have no corresponding Results object. The PE files the Summary and takes action to ensure that all exercise events have associated Results in the O-Base database. The PE also retrieves Platform/Attack data from the database in order to produce a Mk-46 Rapid Feedback Firing Report for distribution to the user command following the exercise. The Operations Analyst and Program Manager retrieve Results and Platform data from the database in order to create periodic reports for the Fleet Commanders, User Commands and for internal FACSFAC distribution. Lastly, the communicator, who may also be the PE, creates and distributes the Mk-46 Quarterly Firing Report to Naval Sea Systems Command.

The Update, Display and Control Mechanisms required for the system are as shown in Appendix E.

III. SYSTEM DESIGN

The third phase of the systems analysis process is the **design** of the system. It is during this phase that the foundation of the database structure is built. The design step actually consists of two phases: the logical design phase and the application design phase. The goal of logical database design is to

> represent objects in the database using relations that (1) provide the data needed to construct user objects and (2) are robust enough to allow rows to be inserted, deleted and modified without resulting in inconsistencies or errors in the stored data. [Ref. 3:pg. 133]

Under logical database design, items to be discussed include the concepts of relations, primary and foreign keys, relationships, relationship constraints and normalization. In the application design phase, the applications and their scope will be addressed, along with control mechanisms and a description of the menu hierarchy.

A. LOGICAL DATABASE DESIGN

In this step, each object developed in the user's requirements phase is translated into one or more two-dimensional tables, called **relations**. Each row in a relation is called a tuple, and corresponds to a record. Each column is an attribute, and corresponds to a field. The relations thus created are depicted in Appendix F. A simple object, such as Brief or Target, which contains only single-valued, non-object properties, is represented by a single relation. A composite object, on the other hand, is one containing one or more non-object multivalued properties, and requires more than one relation for their representation. For example, the Result object (Appendix A) contains several non-object,

multivalued properties which are translated into the Support and Cancel relations given in Appendix F. A compound object contains at least one object property, requiring translation of that object into several relations, each of which could stand on its own. For example, the Exercise object of Appendix A contains the object properties Brief, User and Target, each of which forming its own relation in Appendix F.

1. Relation Keys

Each relation has a set of attributes, called the **key**, which uniquely identifies a tuple. These keys are underlined. In the Exercise relation the key consists of Exercise Type (Exer) and Event Number (Event). In all of the other relations of the Schedule Application, except for Brief, Exercise Type and Event Number appear as part of the key, where they represent a **foreign key** (the key of another relation), as indicated by the asterisk. In the Brief relation, Brief Title (Title) and Brief Time (Time) are the key attributes, but the relation contains Exer and Event as a foreign key.

In the Exercise Results Application, Exer and Event are also common in most of the keys, the exceptions being the Attack relation and those multi-valued objects and attributes associated with it. Exer and Event are, however, present in the Attack relation as a foreign key, as are Command and Sideno (comprising the Platform key). Thus, an attack can be associated with both an exercise event and a specific platform. In a similar manner, the Lost relation, with its multiplicity of foreign keys, can be associated directly with an exercise, an attack, a weapon and/or a target.

2. Relationships

A binary relationship is one that involves only two record types. Whereas an object was converted on a one-to-one basis into a relation (record type), the

relationships between those record types are not necessarily limited to one-to-one. In fact, in this database the majority of the relationships are one-to-many. Referring again to the relation diagrams of Appendix F, a given exercise may have multiple users associated with it, as indicated by the "fork" on the User end of the connecting line. Similarly, an exercise can have many briefs and targets and a user may have more than one weapon.

One-to-one relationships exist between the Attack and WeaponR record types, in that any attack can only have a single weapon result associated with it. Correspondingly, a weapon can only have one attack associated with it during a given exercise. The Lost relation similarly shares one-to-one relationships with WeaponR and TargetR record types.

A simplified relationship diagram for the schedule application can be seen in Figure 3.1 below, and one for the exercise results application in Figure 3.2.

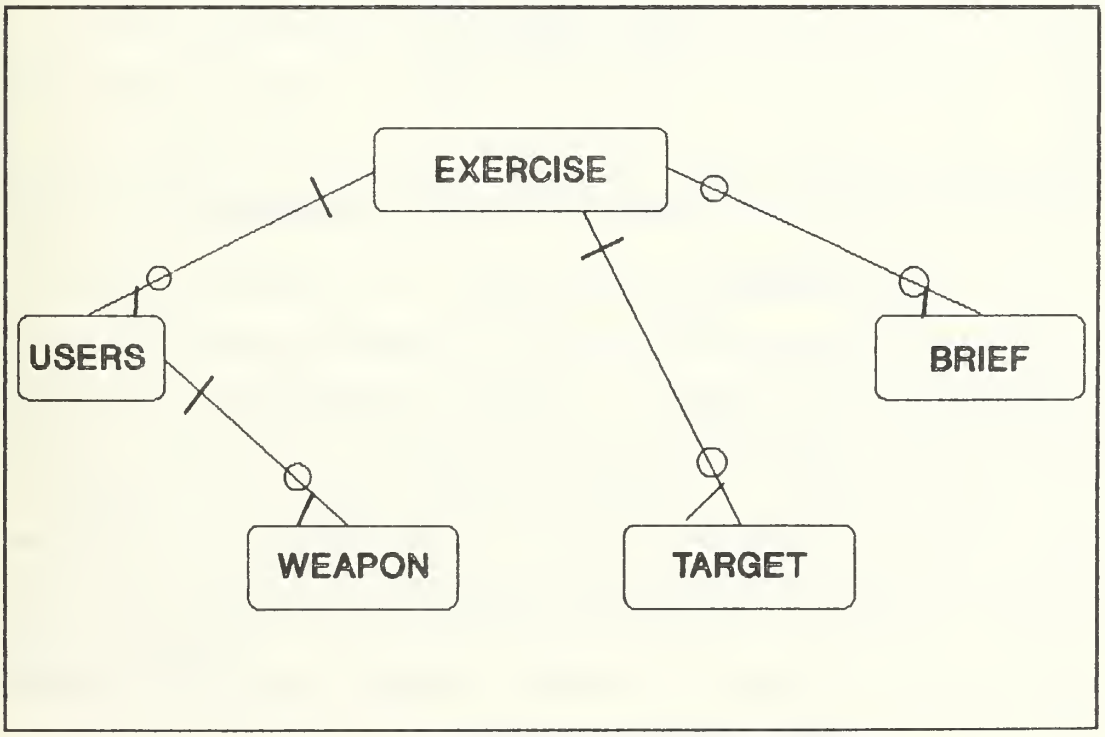


Figure 3.1 Schedule Application Relationships

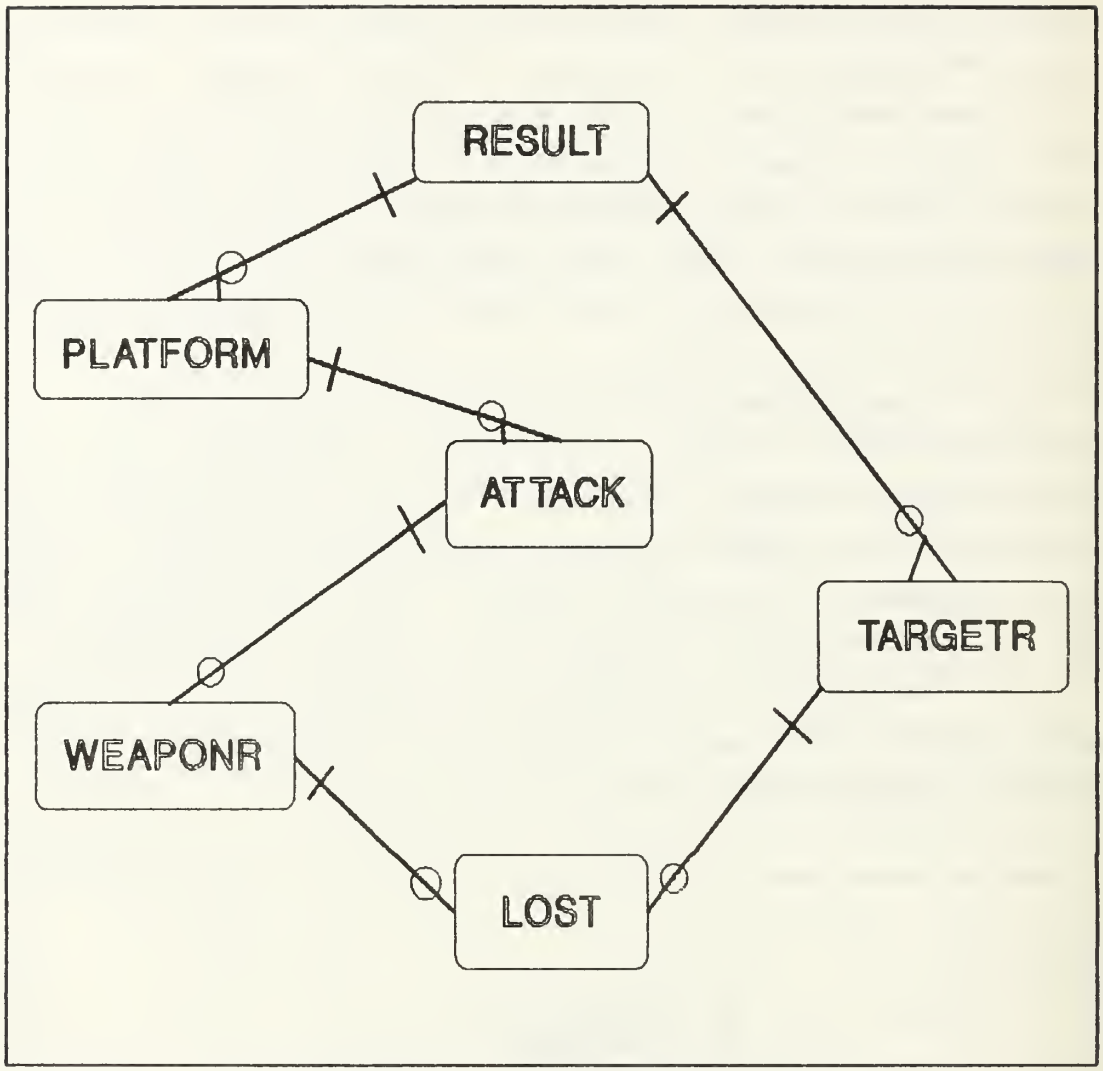


Figure 3.2 Results Application Relationships

3. Relationship Constraints

Another notation used in Figures 3.1 and 3.2 and in Appendix F is one to indicate a mandatory or optional relationship between two record types. A circle at the end of a line indicates an **optional** association. For example, an exercise **may** have a target (or more than one) associated with it, and a platform **may** conduct one or more attack. A bar at the end of the connector indicates a **mandatory** relationship. For example, a weapon results relation (WEAPONR) **must** have an attack associated with it.

The exercise and brief relationships are optional in each direction. This is because an exercise may have only one brief associated with it (rather than the normal two), or, in the case of a range maintenance period (designated as an exercise for scheduling purposes), there may be no scheduled brief at all. Additionally, a brief may be scheduled that does not relate to a specific exercise.

4. Normalization

The relations created in this project are all in at least **third normal form** (3NF). A relation can be considered as being in 3NF if (1) all non-key attributes are dependent on all of the key, and (2) if it contains no transitive dependencies. For example, in the case of the Target relation, the Geometry, Acoustics, Tpinger and Lnchveh attributes are each dependent on Exer, Event and Tgtdesig and only on those attributes.

B. APPLICATION DESIGN

Data flow diagrams (DFD) were developed during the user requirements phase in order to identify the functional needs of the organization. In the application design step, these DFDs are transposed into a functional hierarchy structure, as shown in Appendix G. Each block or module has a specific object or function, and each module contains sub-modules, selection of which will result in a specific task being performed. These hierarchy structures also serve to delineate the applications and the scope of the project, which have been well-defined in previous chapters and will not be repeated here.

1. Control Mechanisms

After determining the number and scope of the applications, the next step in application design is to devise the control mechanisms associated with the applications. A menu-driven application is considered to be the most appropriate control mechanism for this project, due primarily to its simplicity of design and ease of use. Minimum time will be necessary to train the operators in the use of the menus, because they are self-explanatory. Additionally, a menu driven application is far easier to understand than one which is command-driven.

2. Menu Hierarchy Descriptions

The final stage of application design consists of converting the entity-relationship structures into a series of menus. A set of menus is perhaps the easiest method of providing user interface with the application functions. Additionally, they simplify user learning, understanding and utilization of the system. Examples of the various menus corresponding to the hierarchic structures are illustrated in the figures and described below.

a. Main Menu

The main O-Base menu shown in Figure 3.3 allows the user to select which application to enter, or permits him to exit back to the operating system. As mentioned above, permission to enter a selected function will be governed by the password of the user.

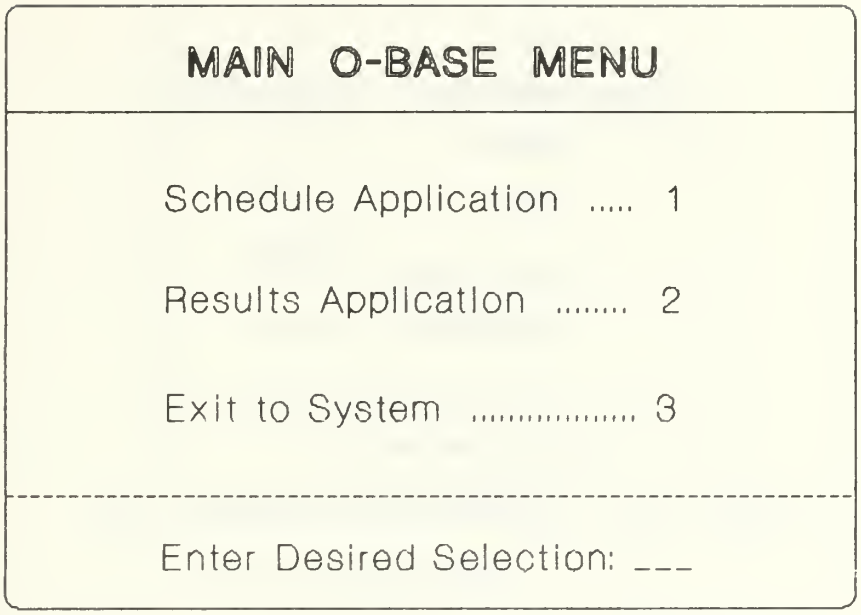


Figure 3.3 System Main Menu

b. Schedule Application Menu

The Schedule Application menu (Figure 3.4) provides the user with the options of selecting an item within the schedule application for update, or performing one of the two print functions associated with the application. The user also has the option to exit to the main menu.

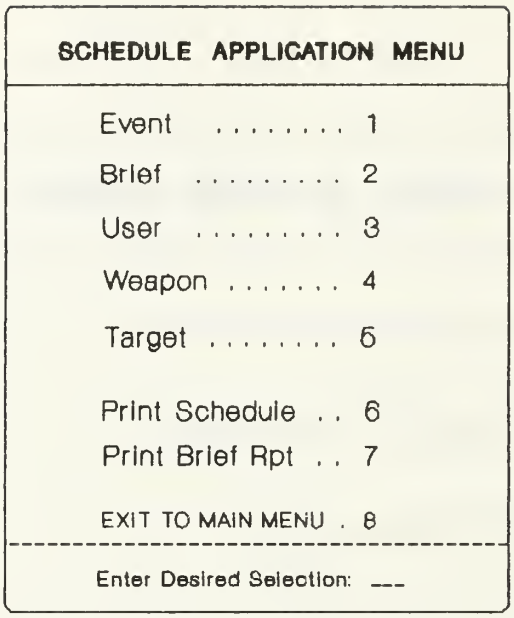


Figure 3.4 Schedule Application Menu

b. Schedule Functions Menu

Following selection of an object to update from the previous menu, the user is presented with a menu displaying the various functions available (Figure 3.5). When creating (adding) an event, the user enters all known data associated with that event, including brief, user, weapon and target information. Additionally, a brief can be added, modified or deleted individually. Modification of user, weapon and target data associated with an existing exercise event is accomplished through modifying the event itself. Deletion of an event deletes all user, weapon, target and brief information associated with that event. The user also has the option to execute user-defined queries

on each of the exercise objects. Lastly, the user can either exit to the previous menu or exit to the main menu.

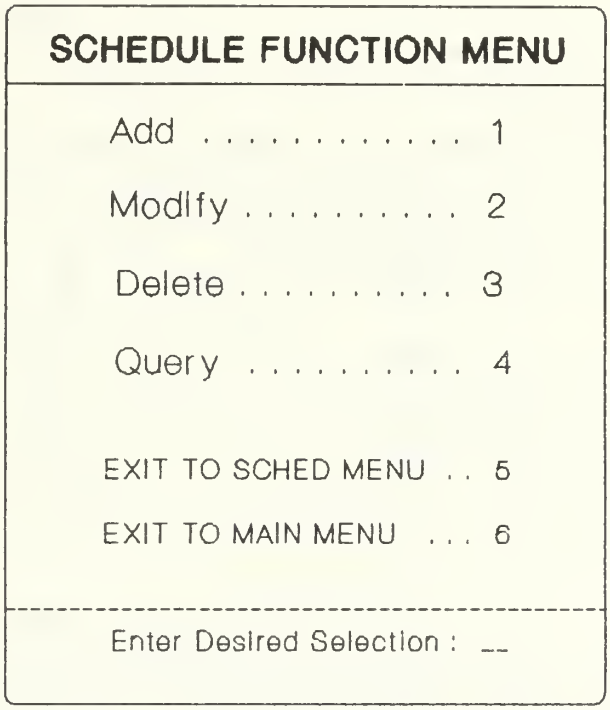


Figure 3.5 Schedule Functions Menu

c. Exercise Results Application Menu

This menu (Figure 3.6) permits the user to enter into the second application of the system -- the Exercise Results application. When a selection is made of one of the objects associated with the results application, the user is presented with a Results Functions menu similar to the one for the Schedule application (see Figure 3.5). It is through the functions menu that the update of the selected object is performed. Additionally, the user has the option of selecting a Report Generator function from this

menu. Although beyond the scope of this project, future enhancements to the system could permit automated reports through this function. The user also may exit back to the main menu.

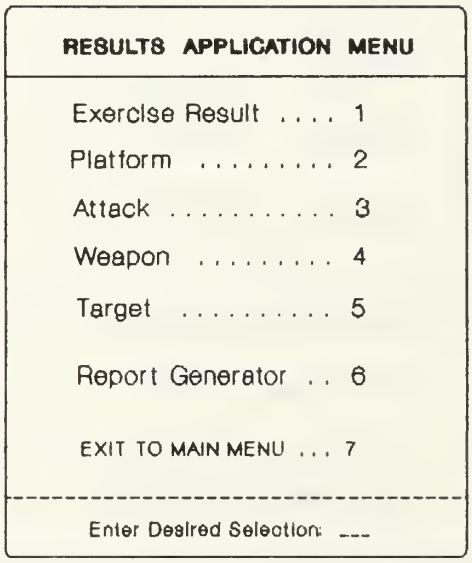


Figure 3.6 Results Application Menu

If the user desires to create a new exercise result, he selects "Exercise Result" from the Results Application Menu, followed by "Add" from the Results Functions Menu. He is then cycled through all relevant objects associated with the new exercise result. Individual objects, such as Attack, are added in the same manner. Deletion of a Platform requires prior deletion of any Attack and Weapon associated with that platform. Deletion of a Result will cause the deletion of **all** objects associated with it. Any other object may be deleted individually.

IV. SYSTEM IMPLEMENTATION

A. INTRODUCTION

The second step in the design phase, and the final step in the systems analysis cycle, is implementation. The main task of of implementation is to construct a system according to the design. In this step, the relations, rows and attributes of the design phase are translated into DBMS-specific **tables**, **records** and **fields**.

Based on application design, the application development tools of Oracle are used to construct the forms, reports and menus needed in the system. The Oracle DBMS will be addressed after a discussion of table and screen generation.

1. Database Tables

Data requirements were identified during the user requirement phase and were presented in the form of **objects**. During the logical design phase of the last chapter, the objects were translated into corresponding **relations**, and relationships between the relations were established. In the implementation phase, these relations are translated into DBMS-specific (Oracle) **tables**. These tables are the essence of data storage and management in the database management system. Each table consists of a series of columns, or **fields**, which equate to the attributes of the logical relations. A single row of data within a table is referred to as a **record**.

A listing of all tables created for this project is found in Appendix H. The first section of the appendix contains those tables necessary for the storage and display of the actual data, while the second section contains the

look-up tables designed to assist the user in making proper entries in various fields.

Appendix I presents the associations between the descriptive names, domain names and actual table field names for each object.

2. Screen Designs

The second task of the user requirements phase was the identification of the functional requirements of the system. The task was accomplished by the creation of a series of **data flow diagrams** (DFD). The logical design phase converted the DFDs into **menus** that allowed the user to control the insertion, modification and deletion functions. During the implementation phase, the menus are translated into **screens**, or **views**, which provide the user the actual mechanisms for update and display of the data. The screens are the materializations of the objects, containing selected rows and columns of the underlying tables. In some cases, a single screen consists of two or more joined tables. Because these screens are not stored as actual physical tables, the views can be termed **virtual** tables. Appendix J contains the various screens developed for the two applications. The following section describes the DBMS used for implementation of this project.

B. ORACLE RELATIONAL DATABASE MANAGEMENT SYSTEM (RDBMS)

Oracle is an extremely powerful, Standard Query Language (SQL)-based relational database management system. The Oracle corporation has added non-standard extensions to the SQL language, thus term their product "SQL*Plus". Due to its utility at both the stand-alone microcomputer level and the network level, and its high degree of portability, it was selected by FACSFAC as the program of choice for their automated database system. Hardware and system requirements of Oracle were presented in Chapter I.

The Oracle products include a variety of applications development and generation tools, providing

> complete facilities that systems designers and developers can use to design, develop and test software products whose engine is the Oracle RDBMS. [Ref. 5:pg. xxv]

The most significant tools used in this project include SQL*Plus, SQL*Forms and, to some extent, SQL*Report.

1. **SQL*Plus**

The developer uses the SQL*Plus query language to "create, store, modify, retrieve, print and manage information in an ORACLE database" [Ref. 6:pg. i]. Of all the programs in the Oracle system, it provides the most direct access to the data. It is through this tool that the tables were created and the data was inserted into the tables.

2. **SQL*Forms**

This tool is used by both the system developer and the system operator. The developer selects the rows and columns of the tables for display in screens through the use of the SQL*Forms program. This portion of the program is called **Design forms**. After the form has been generated, the **Run form** procedure permits the operator to work with the information that the form accesses. Once the form is displayed, the operator is able to perform the logical menu functions of insertion, deletion and modification described in the previous chapter.

3. **SQL*Report**

Like SQL*Forms, this program also has two utilities. The Report Text Formatter (RPF) is "a general-purpose text formatter for a variety of word processing applications ...." [Ref. 7:pg. 9]. The second utility is the Report Generator (RPT), which enables the developer to extract specific data from the database and include it in a report.

RPT must be used in conjunction with some type of text formatter, such as RPF.

A far more powerful report generator, SQL*Report-writer, has recently been marketed by the Oracle corporation, but was unavailable for this project.

C. SOFTWARE DOCUMENTATION

1. User Manual

The user manual written for this system is provided in Appendix K. It is designed for a user familiar with the Oracle RDBMS, having had, as a minimum, attended an operator training course or read an operator tutorial. Because implementation of the system does not lend itself to a menu layout in the Oracle environment, the logical menu functions described in the previous chapter are performed through the activation of various keyboard keys. The function keys and special-purpose keys used by Oracle and/or custom-designed for this system are defined in the user manual. Also included in the manual are the various field constraints, formats and masks which must be adhered to while creating new records.

2. Main Program

The program developed for this project is written in SQL, a powerful fourth generation language (4GL). Because it is a 4GL, standard program descriptions (structure charts, etc.) and subroutines are not applicable to the actual design. The length of the program precludes its incorporation as an appendix.

D. REPORTS

The operator has the option to print two standard, automated reports through the system: 1) a weekly schedule of activities, and 2) a weekly briefings report. These reports were created using SQL*Report. An example of each is presented in Appendix L.

V. CONCLUSIONS AND RECOMMENDATIONS

A. SUMMARY AND CONCLUSIONS

The amount and complexity of the operational data collected and stored by the Fleet Area Control and Surveillance Facility will soon overwhelm the manual data handling capabilities of the command. This study develops a relational database system prototype to assist the organization in those critical areas of its activities. One of the main goals is to increase the speed and accuracy of data input, thereby enhancing the effectiveness and productivity of the unit. Additionally, a powerful database query function and a report generation capability will greatly facilitate user performance.

The system is viewed as being two separate but interactive applications. The scheduling application is used to input, modify and delete data elements associated with creation of a weekly schedule of activities and a weekly briefings report. The results application is designed to allow for the input, modification and deletion of operational data gathered during the execution of various scheduled exercises.

The power and flexibility of ORACLE made it the program of choice by FACSFAC for their database system. Despite its advantages, ORACLE is difficult to apply for the novice user, thus a detailed Users Manual is provided in Appendix K to assist the operator. The prototype system was designed with the goal of making it as easy as possible to understand and use, however a certain level of operator knowledge of ORACLE is assumed. The Users Manual contains a section describing the various function keys and their applications

in ORACLE, as well as the special purpose keys custom designed into the prototype model to make it user-friendly.

B. RECOMMENDATIONS AND FUTURE WORK

Establishment of a relational database allows for future expansion and capability enhancements. Using data gathered and stored in the results application, SQL*Reportwriter can be used to develop an automated report generation capability for the operations analyst. Additionally, the system can be enhanced through the incorporation of an automatic scheduling and conflict resolution decision support program. Development of these two augmentations to the prototype will serve to increase command efficiency even further. Finally, the ability of ORACLE to be utilized in a network environment conforms well with the strategic information technology goals of the organization. Development of an interactive network linking the three databases is open for further study.

APPENDIX A

RELATIONAL DATABASE OBJECTS

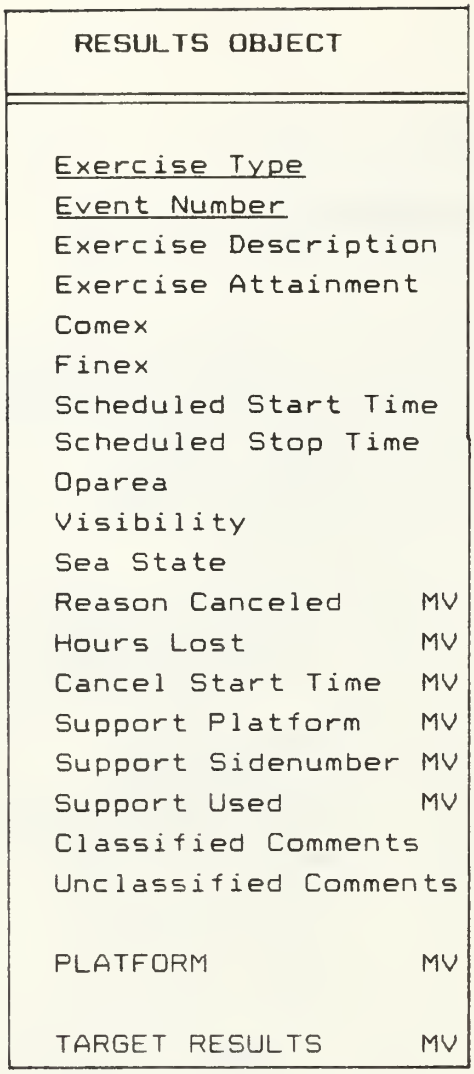
EXERCISE OBJECT
Exercise Type
Event Number
Exercise Description
Scheduled Start Time
Scheduled Stop Time
MOCS Start Time
MOCS Stop Time
Operational Area
Exclusive
Primary Tgt Recovery
Secondary Tgt Recovery
Primary Wpn Recovery
Secondary Wpn Recovery
Weapon Haulback
Tracking Type
Project Engineer
Operation Controller
Operation Analyst
Safety Officer
Green Message Required
Green Message Sent
Submarine Relaxation Message Required
Air Space Allocated
Communications
Comments
BRIEF MV
USERS MV
TARGET MV
RESULTS

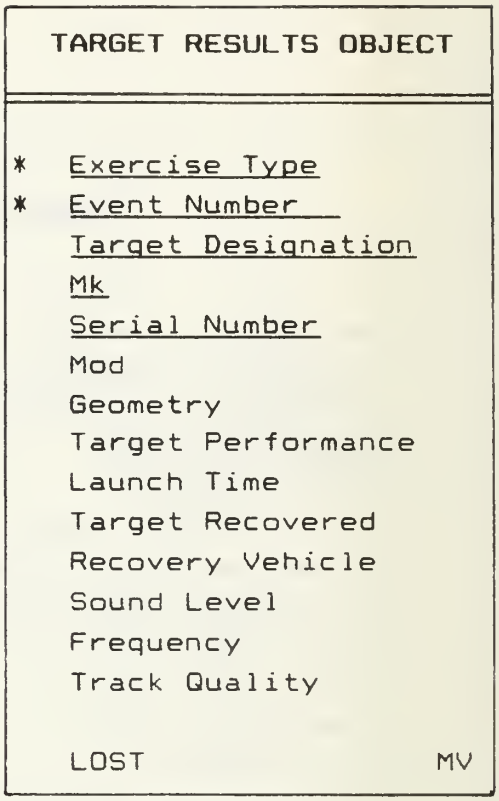
BRIEF OBJECT
Brief Title
Date and Time
Location
Briefer

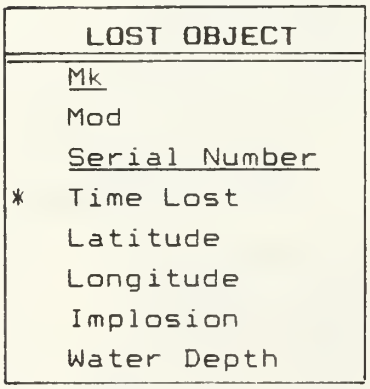
TARGET OBJECT
* Exercise Type
* Event Number
Target Designation
Target Geometry
Acoustics Code
Pinger Channel
Launch Vehicle

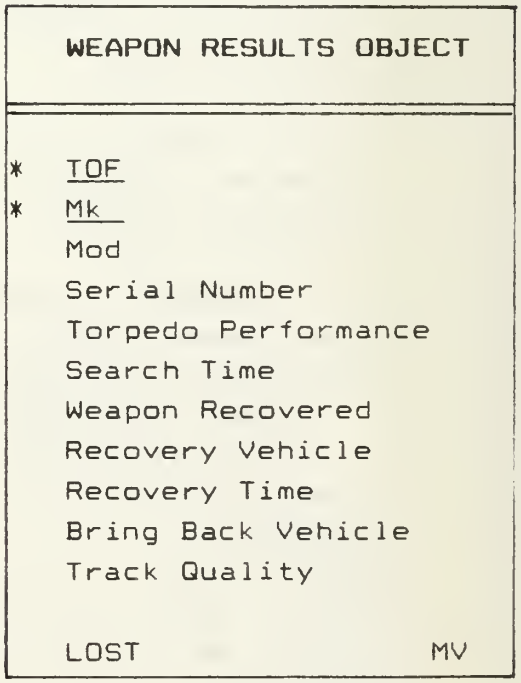
WEAPON OBJECT
Weapon Type
* Command Name
Number Scheduled
Pinger Channel

USERS OBJECT
* Exercise Type
* Event Number
Command Name
Number of Units
EATS Transponder
Pinger Channel
WEAPON MV


RESULTS OBJECT
Exercise Type
Event Number
Exercise Description
Exercise Attainment
Comex
Finex
Scheduled Start Time
Scheduled Stop Time
Oparea
Visibility
Sea State
Reason Canceled MV
Hours Lost MV
Cancel Start Time MV
Support Platform MV
Support Sidenumber MV
Support Used MV
Classified Comments
Unclassified Comments
PLATFORM MV
TARGET RESULTS MV


TARGET RESULTS OBJECT
* Exercise Type
* Event Number
Target Designation
Mk
Serial Number
Mod
Geometry
Target Performance
Launch Time
Target Recovered
Recovery Vehicle
Sound Level
Frequency
Track Quality
LOST MV


LOST OBJECT
Mk
Mod
Serial Number
* Time Lost
Latitude
Longitude
Implosion
Water Depth


WEAPON RESULTS OBJECT
* TOF
* Mk
Mod
Serial Number
Torpedo Performance
Search Time
Weapon Recovered
Recovery Vehicle
Recovery Time
Bring Back Vehicle
Track Quality
LOST MV

ATTACK OBJECT
Time of Fire
* Command Name
* Side Number
Start Op
Actual Target Course
Actual Target Bearing
Actual Target Speed
Actual Target Range
Actual Target Depth
Target Maneuver Time
Target Maneuver Course
Target Maneuver Speed
Target Doppler
Solution Bearing
Solution Course
Solution Speed
Solution Range
Heading at TOF
Speed at TOF
Mode
Sonar Setting
Contact Type
Acquired
Eval of Attack
Search Depth
Comments
Altitude
Delivery Method
Ph
Bearing to Splash Point
Range to Splash Point
Acquired
Eval of Attack
Search Depth
Comments
WEAPON RESULTS

PLATFORM OBJECT	
* Exercise Type	
* Event Number	
Command Name	
Side Number	
Showed Up	
Track Quality	
Lofar	
Difar	
Dicas	
Vlad	
Weapon Assigned	MV
Number of Weapons	MV
No Drop	MV
ATTACK	MV

APPENDIX B

OBJECT DEFINITIONS

EXERCISE OBJECT

Descriptive Name	Domain Name
Exercise Type	Exer
Event Number	Event
Exercise Description	Exdesc
Schedule Start Time	Time-Schstart
Schedule Stop Time	Time-Schstop
MOCS Start Time	Time-MOCS Start
MOCS Stop Time	Time-MOCS Stop
Operational Area	Oparea
Exclusive Use	Exclusive
Primary Target Recovery Vehicle	Recovery-Pri
Secondary Target Recovery Vehicle	Recovery-Sec
Primary Weapon Recovery Vehicle	Recovery-Pri
Secondary Weapon Recovery Vehicle	Recovery-Sec
Weapon Haulback Vehicle	Recovery-Haulback
Tracking Type	Tracking Type
Project Engineer	Personnel-Pe
Operation Controller	Personnel-Oc
Operation Analyst	Personnel-Oa
Safety Officer	Personnel-So
Green Required	Message-Req
Green Sent	Message-Sent
Submarine Relaxation Message	Message-Sub
Air Space	Air Space
Communications	Communications
Comments	Comments

BRIEF: BRIEF object; MV
USERS: USER object; MV
TARGET: TARGET object; MV
RESULTS: RESULTS object

BRIEF OBJECT

Descriptive Name	Domain Name
Brief Title	Brief Title
Brief Time	Time-Brief
Location	Location
Briefer	Personnel-Brief

USERS OBJECT

Descriptive Name	Domain Name
Exercise Type	Exer
Event Number	Event
Command Name	Command
Number of Units	Number-U
EATS Transponder	Transponder
Pinger Channel	Pinger-U
WEAPON: WEAPON object	MV

TARGET OBJECT

Descriptive Name	Domain Name
Exercise Type	Exer
Event Number	Event
Target Designation	Target Designation
Geometry	Geometry Code
Acoustics	Acoustics
Pinger	Pinger-T
Launch Vehicle	Launch

WEAPON OBJECT

Descriptive Name	Domain Name
Mk	Mk
Command Name	Command
Number Scheduled	Number-S
Pinger	Pinger-W

RESULTS OBJECT

Descriptive Name		Domain Name
Exercise Type		Exer
Event Number		Event
Exercise Description		Exdesc
Comex		Time-C
Finex		Time-F
Scheduled Start Time		Time-Schstart
Scheduled Stop Time		Time-Schstop
Operational Area		Oparea
Visibility		Visible
Sea State		Seastate
Reason Canceled	MV	Canceled
Hours Lost	MV	Hours
Cancel Start Time	MV	Time-Cancel
Support Platform	MV	Command
Support Side No.	MV	Sidenumber
Support Used	MV	Used
Classified Comments		Comments
Unclassified Comments		Comments

PLATFORM; PLATFORM object; MV

TARGET RESULTS; TARGET RESULTS object; MV

PLATFORM OBJECT

Descriptive Name		Domain Name
Exercise Type		Exer
Event Number		Event
Command Name		Command
Side Sumber		Sidenumber
Showed Up		Showed
Track Quality		Track Quality
Lofar		Sonobuoy no.
Difar		Sonobuoy no.
Dicass		Sonobuoy no.
Vlad		Sonobuoy no.
Weapon Assigned	MV	Mk
Number of Weapons Scheduled	MV	Number-S
No Drop	MV	Nodrop

ATTACK; ATTACK object; MV

TARGET RESULTS OBJECT

Descriptive Name	Domain Name
Exercise Type	Exer
Event Number	Event
Target Designation	Target Designation
Mod	Mod
Serial Number	Serial Number
Target Performance	Target Performance
Geometry	Geometry Code
Launch Time	Time-L
Target Recovered	Recovered
Recovery Vehicle	Recovery
Sound Level	Sound
Frequency	Frequency
Track Quality	Track Quality
LOST; LOST object	

WEAPON RESULTS OBJECT

Descriptive Name	Domain Name
Time of Fire	TOF
Mk	Mk
Mod	Mod
Serial Number	Serial Number
Torpedo Performance	Torpperf
Search Time	Search-seconds
Weapon Recovered	Recovered
Recovery Vehicle	Recovery
Recovery Time	Minutes-Recover
Bring Back Vehicle	Recovery
Track Quality	Track Quality
LOST; LOST object	

LOST OBJECT

Descriptive Name	Domain Name
Mk	Mk
Mod	Mod
Serial Number	Serial Number
Time Lost	Time-Lost
Latitude	Lat
Longitude	Long
Implosion	Depth-Imp
Water Depth	Depth-Water

ATTACK OBJECT

Descriptive Name		Domain Name
Time of Fire		Time-Tof
Command Name		Command
Start Op		Time-Start-time
Actual Target Course		Compass-Tc
Actual Target Bearing		Compass-Tb
Actual Target Speed		Kts-Ts
Actual Target Range		Range-T
Actual Target Depth		Depth-T
Target Maneuver Time		Minutes-Maneuver
Target Maneuver Course		Compass-Tm
Target Maneuver Speed		Kts-Tm
Target Doppler		Doppler
Solution Bearing		Compass-Sb
Solution Course		Compass-Sc
Solution Speed		Kts-S
Solution Range		Range-S
Heading at TOF		Compass-Heading
Speed at TOF		Speed
Altitude		Height
Mode		Modecode
Sonar Setting		Sonar
Contact Type		Contact Code
Delivery Method		Delivery Code
Bearing to Splash Point		Compass-Splashpt
Range to Splash Point		Range-Splashpt
Acquired		Acquired
Eval of Attack		Eval
Search Depth		Depth-S
Comments	MV	Comments
Line Number	MV	Linenumber

WEAPON RESULTS; WEAPON RESULTS object;

APPENDIX C

DOMAIN DEFINITIONS

Acoustics Code:
char (1)
range: Y, N
Indicates whether or not the target acoustics are those required.

Acquired:
number (1), integer
range: 0-9
The number of times that the torpedo acquired the target. 0 if it did not acquire the target.

Air Space:
char (5)
mask: LL-UU,
where LL is in {00...99} and UU is in {01...99}
Indicates the altitude range reserved in the operational area for participating aviation units.

Brief Title:
char (20)
The title of the exercise brief to be given.

Canceled:
char (25)
One of 6 reasons why an event was cancelled (asset availability, fouled range, intrumentation, weather, no air tracking, no show).

Command:
char (8)
The designation of the command (ie VP-44, SSN-680).

Comments:
char (75)
Narrative remarks pertaining to the exercise and the exercise results.

Communications:
char (3)
range: in {'UHF', 'VHF', 'HF'}
Frequency range to be used for exercise communications.
Default: UHF

Compass:
number (3), integer
range: 000-359
Measured in degrees true, except for splashpt.
Heading: the heading of the platform at TOF.
Sb: the platform's solution bearing to target.
Sc: the platform's solution course for the target.
Splashpt: relative bearing of the weapon splash point from the target.
Ta: the course programmed into the torpedo.
Tb: the true bearing from platform to the target at TOF.
Tc: the true compass heading of the target.
Tm: the new course of target after it maneuvers if maneuver occurs after TOF and while torpedo is running.

Contact Code:
char (12)
Indicates how the platform detected and maintained contact with target (mad, difar, dicass, ro, lofar, dipper, surfpass, surfact, ir, vectac, spherical, hull, towed array).

Delivery Code:
char (5)
range: svtt, rtt (asroc), hover, flyin, tt, asroc
How the torpedo was delivered to the splash point.

Depth:
number (4)
range: 0-9999
T: the depth at which the target is set to run.
S: the depth at which the torpedo is set to search.
Imp: the depth at which the torpedo/target imploded (set to 0 if implosion depth is unknown).
Water: the depth of the water at site of a lost weapon or target.

Doppler:
char (1)
range: 1-5
A code describing the type and amount of doppler that the target has. [(1) > 5kts, (2) 2.5-5.0kts, (3) 2.5-(-2.5)kts, (4) (-2.5)-(-5.0) kts, (5) < 5kts].

Eval:
char (10)
Evaluation as to whether the torpedo hit the target. (hit, prob hit, prob miss, miss, unknown).

Event:
number (5)
mask: YYNNN, where YY are the last two digits in the year and NNN is the sequential number of that exercise conducted during that year.
The user-generated code identifying the specific exercise.

Exattain:
char (1)
range: Y, N
Indicates whether or not the range achieved its objective for the exercise, i.e., the proper services.

Exclusive:
char (1)
range: Y, N
Indicates whether or not the event has exclusive use of the operational area.

Exdesc:
char (12)
Narrative description of the exercise to be conducted. Derived from exercise publications.

Exer:
char (4)
mask: ANNN, where A is char and N is digit
The designation of the type of exercise to be conducted. Derived from exercise publications.

Frequency:
char (2)
range: NB, BB
Indicates whether the target is transmitting mainly narrow band (NB) or broad band (BB) sounds. N/A if designation is a ship.

Geometry Code:
char (4)
The code for the geometry programmed into the target. (N/A if designation is a ship or submarine).

Height:
number (5)
range: 0 - 99,999
The height at which the Mk-46 torpedo was launched. For surface ship, Height = 0.

Hours:

number (2,1)

range: .1 - 99

Number of hours that were lost for a specific reason canceled. Recorded as hours and tenths of hours. Total of all cancelled hours can not exceed difference between scheduled start time and scheduled stop time.

Kts:

number (2)

range: 0-99

Speed measured in kts.

Ts: the actual speed of the target at TOF.

Tm: the speed of the target after maneuver, if maneuver occurs after TOF and before end of torpedo run.

Ss: the platform's solution of speed for the target.

Lat:

char (10)

Template: dd:mm:ss N, where dd is degrees, mm minutes, ss seconds.

range: dd 20 - 40
mm 0 - 59
ss 0 - 59

The latitude at which the target or weapon was lost. All latitudes are assumed to be north (N).

Launch:

char (7)

The designation of the launch vehicle for the exercise target. N/A if the target is a surface ship or an actual submarine.

Linenumber:

number (3), integer

Identifies unique line number of comments.

Location:

char (20)

Provides the location of the brief.

Longitude:

char (9)

template ddd:mm:ss W

range: dd 0 - 180
mm 0 - 59
ss 0 - 59

The longitude at which the weapon or target was lost. All longitudes are assumed to be west (W).

Message:
char (1)
range: Y, N
Req: indicates whether or not a "green" tasking message needs to be sent to the participants in the exercise.
Sent: if Req = Y, indicates whether or not the tasking message has been sent. N/A if Req = N.
Sub: indicates whether or not a submarine relaxation message is required for the exercise.

Minutes:
number (2,1)
range: 0.0 - 60.0
Maneuver: the time in minutes after TOF at which the target maneuvers. If no maneuver while the torpedo is running then 0 is entered. If maneuver occurs at TOF enter 0.1. If 0 IS entered, skip target maneuver course and speed.
Recover: the number of minutes expended by the recovery vehicle in retrieving the weapon following the exercise.
Search: the number of minutes that the torpedo was engaged in searching for the target.

Mk:
char (8)
range: legal real/simulated weapons or targets from look up tables. The mk of the weapon or target.

Mod:
char (5)
range: legal mods for the selected torpedo
The mod of the torpedo.

Modecode:
char (6)
range: 'snake' or 'circle'
Mode the torpedo uses in its search.

Nodrop:
char (1)
range: a - i
Letter code to indicate why the participant did not fire all of his scheduled weapons. (a- platform problems, b- torpedo problems, c- weather, d- inadequate recovery assets, e- time constraints, f- fouled range g- inadequate TMA, h- pinger problem, i- other).

Number:
number (1)
S: the number of weapons scheduled to be dropped.
U: the number of units participating in an exercise from a given command.

Oparea:
char (6)
User-generated title for the area in which the exercise will be conducted.

Personnel:
char (10)
Brief: briefer assigned to conduct designated brief.
Oa: operations analyst assigned to the exercise.
Op: operation controller assigned to the exercise.
Pe: project engineer assigned to the exercise.
S: range safety officer assigned to the exercise.

Ph:
number (3)
range: 0-100
Percent rating of the placement of the weapon.

Pinger:
char (4)
range: in {'nA', 'nB', 'nAnB'}, where n is an integer
Indicates number of and channel(s) of pinger(s) assigned to a resource.
T: indicates the number and channel of the pinger in the target.
U: indicates the number and channel of pinger used by the participating user submarine.
W: indicates the number and channel of the pinger in the weapon.

Range:
number (5)
range: 0 - 99,999
Measured in yards.
S: the platform's solution of the distance at TOF.
Splashpt: distance from the splash point to target.
T: actual distance of target from platform at TOF.

Recovered:
char (1)
range: Y, N
Indicates whether or not the object has been recovered. If N, then the LOST object is used. N/A if target designation is a ship .

Recovery:
char (8)
The designation of the recovery vehicle for the object (ie TRW-768 or HC-1563). N/A if target designation is a ship.
Haulback: the designated weapon haulback vehicle.
Pri: primary recovery vehicle.
Sec: secondary recovery vehicle.

Search-seconds:
number (3)
range: 0 - 999
The amount of time the weapon was in its search phase.

Seastate:
number (1)
range: 0 - 9
The sea state as measured by the beaufort scale.

Serial Number:
char (7)
The serial number of the torpedo.

Showed:
char (1)
range: Y, N
Used to indicate whether or not the scheduled platform showed up for the exercise.

Sidenumber:
char (7)
The number on the side of an aircraft to uniquely identify it. Used only if command is a aircraft squadron.

Sonar:
char (7)
range: 'active', 'passive', 'combo', 'actpass'
The type of sonar detection used by the torpedo.

Sonobuoy no.:
number (3)
range: 0 - 999
The number of sonobuoys of a particular type dropped by a platform.

Sound:
number (3)
range: 0 - 999
Sound level of target measured in dB; or, the augmentation sound level if the target is a ship.

Speed:
number (3)
range: 0 - 500 kts
Speed of the platform at time of attack.

Target Designation:
char (8)
Indicates the type of target used in the exercise.

Target Performance:
char (20)
Objective evaluation of target performance during the exercise. ("Did Not Run", "Floater", etc.).

Time:
char (14)
mask: ddhhmmZ MONyy
Brief: scheduled brief time.
C: the time an event actually starts from the point of view of the range. (Default: sched start time).
F: the time an event actually finishes from the point of view of range. (Default: sched finish time).
Lost:
Range: comex to finex
Time at which the weapon or target was lost
L:
Range: comex to finex
Time at which the target is launched.
MOCS start: scheduled man-up time for range personnel.
MOCS stop: scheduled shut-down time for range personnel.
Schstart: scheduled exercise start time.
Schstop: scheduled exercise finish time.
Start:
Default: comex
Range: comex to finex
Time at which the platform started searching for the target which resulted in this attack.
Tof:
Default: Date part to comex.
Range: comex to finex.
Time of fire of a weapon.

Torpperf:
char (20)
Indicates the performance of the weapon after launch. (normal run, erratic run, did not run, sank at launch point, sank at end of run, damaged).

Track Quality:
number (3)
range: 0 - 100
The percent evaluation of the quality of the range's track of the object. (0 = no track, 100 = perfect track).

Tracking Type:
char (1)
range: in {e, i, b}
The type of tracking to be used during the exercise. (e = EATS, i = in-water, b = both).

Transponder:
char (4)
range: IPIP, SIP, SAIP
Indicates the type of transponder with which the platform is equipped. N/A for submarines.

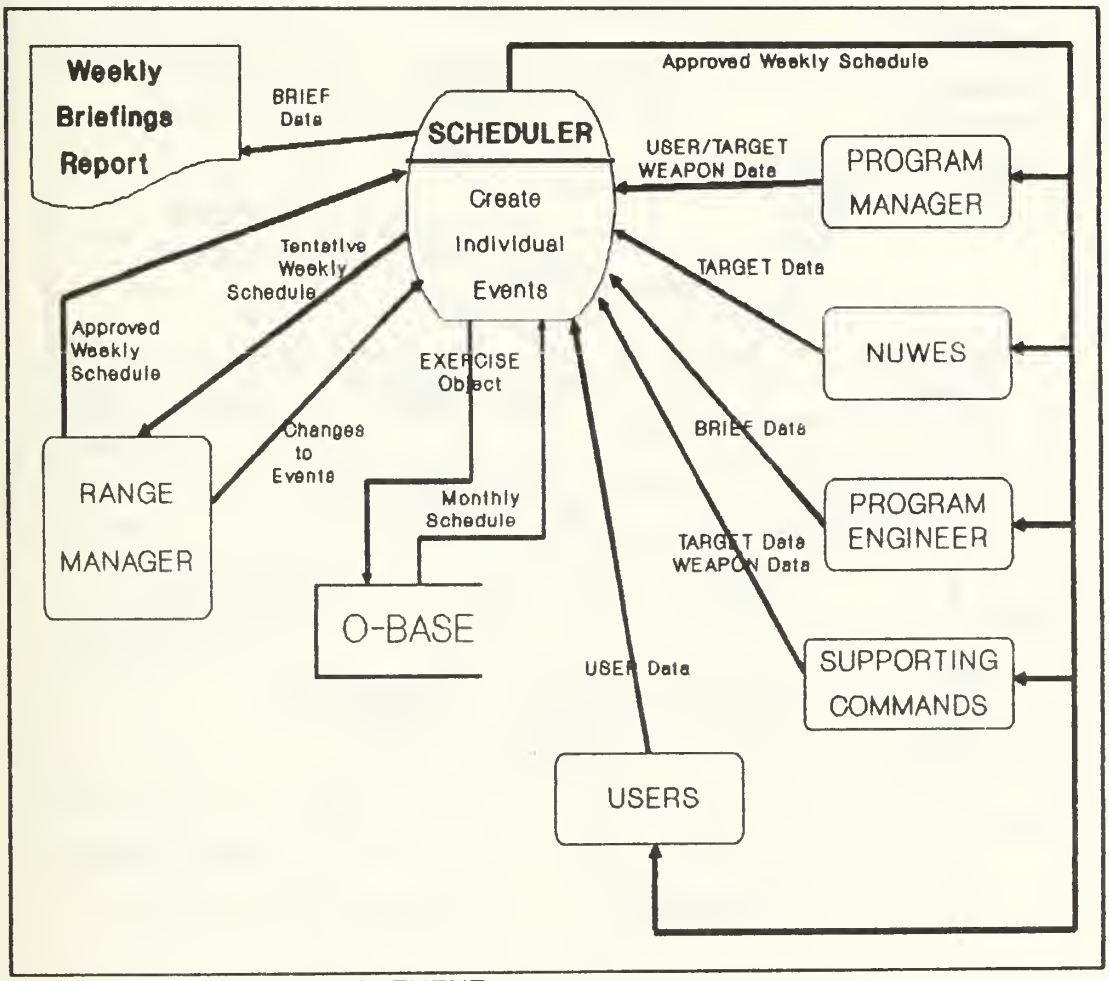
Used:
char (1)
range: Y, N
Indicates whether or not a scheduled support platform was used during the event.

Visible:
number (2)
range: 0 - 99
The visibility on the range in nm. (99 = unlimited).

APPENDIX D

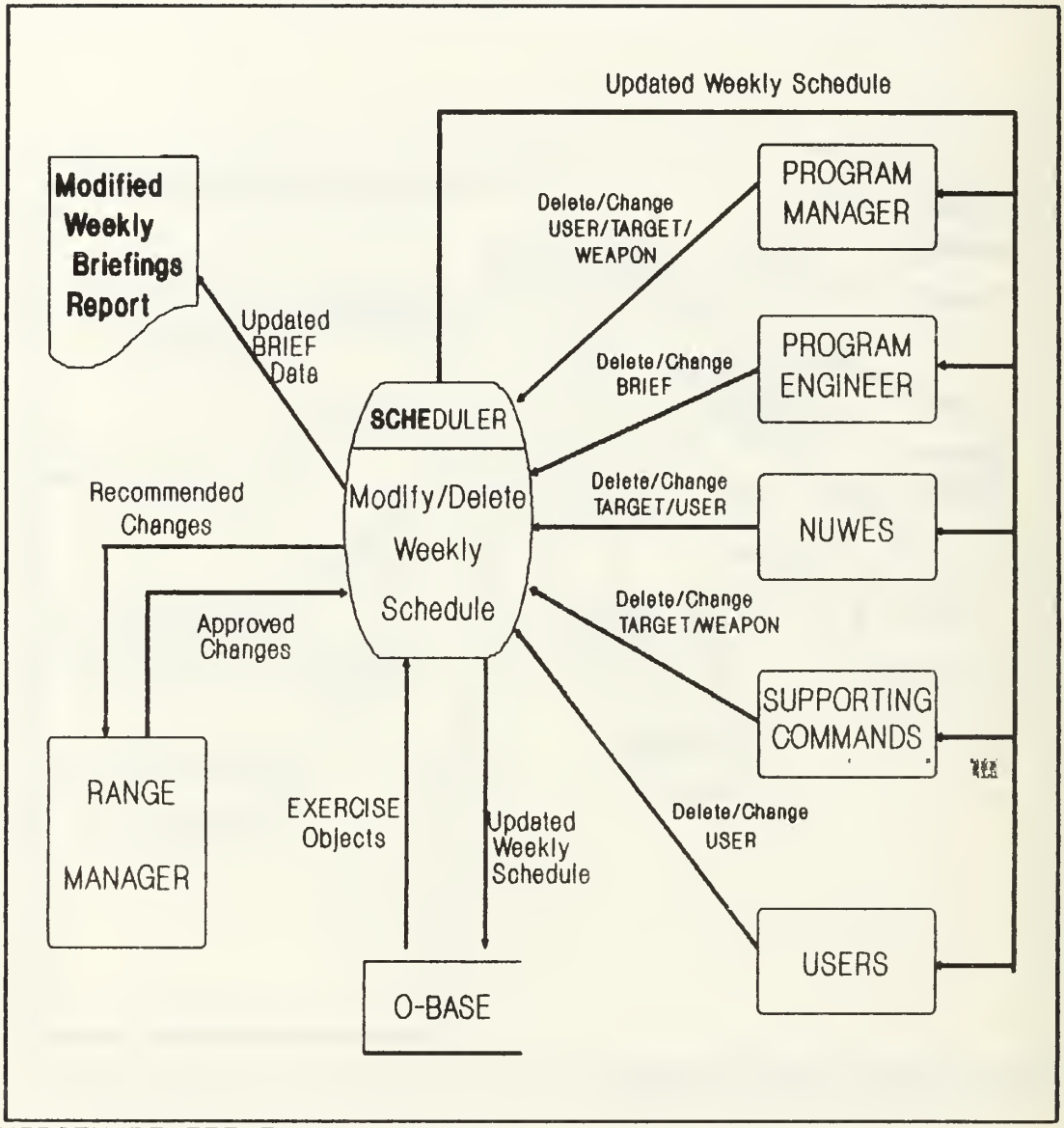
DATA FLOW DIAGRAMS

A.



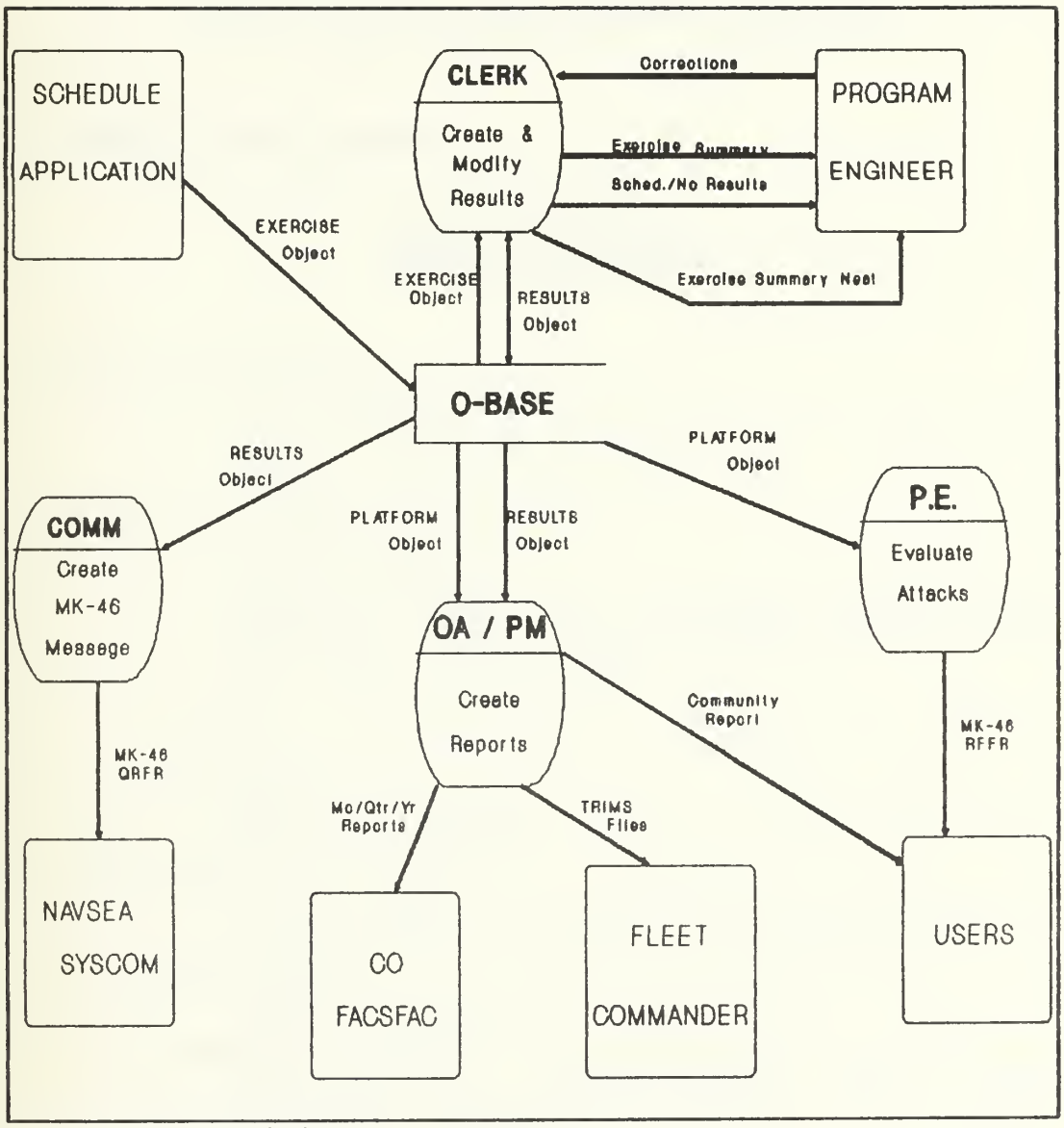
CREATE NEW EXERCISE EVENT

B.



MODIFY/DELETE EXERCISE EVENT

C.



RESULTS APPLICATION

APPENDIX E

UPDATE, DISPLAY AND CONTROL MECHANISMS

A. Schedule Application

EXERCISE OBJECT
Display Mechanisms

I. Query on Exercise
   A. Output Description
      - form showing all data for a given exercise event
   B. Source Data
      - EXERCISE object
   C. Processing Notes
      - EXERCISE object contains USER, WEAPON, BRIEF and TARGET object data
   D. Volume
      - five per week
   E. Frequency
      - daily, as needed

II. Weekly Exercise Schedule
   A. Output Description
      - ORACLE report form sent to all concerned
   B. Source Data
      - EXERCISE object
   C. Processing Notes
      - EXERCISE object contains BRIEF, USER, WEAPON and TARGET objects
   D. Volume
      - 25 per week
   E. Frequency
      - once per week

III. Modified Weekly Exercise Schedule

A. Output Description
- ORACLE report form sent to all concerned
- confirmation message on screen

B. Source Data
- current Weekly Exercise Schedule
- EXERCISE object
- Exercise Type and Event Number keyed by PE

C. Processing Notes
- BRIEF, USER, WEAPON and TARGET objects contained within associated EXERCISE object

D. Volume
- 25 per occurrence

E. Frequency
- daily, as needed

EXERCISE OBJECT
Update Mechanisms

I. Create Exercise

A. Input Description
- list of exercises (from monthly planning schedule)
- personnel availability (from A-Base)
- range availability (from E-Base)
- TARGET object data (from Project Manager, NUWES, and Supporting Commands)
- USER object data (from Project Manager and NUWES)
- WEAPON object data (from Project Manager and Supporting Commands)
- BRIEF object data (from Project Manager)

B. Output Description
- new EXERCISE object in database
- new BRIEF object in database
- new USER object in database
- new WEAPON object in database
- new TARGET object in database
- confirmation message on screen

C. Processing Notes
- scheduler needs access to A-Base and E-Base

D. Volume
- normal two exercises per day, five days per week

E. Frequency
- once per week

II. Modify EXERCISE Data

A. Input Description
- changes to monthly planning schedule (from PM, NUWES, and Supporting Commands)
- changes to personnel availability (from (A-Base)
- changes to range availability (from E-Base)
- changes to scheduled exercise event (from PM, NUWES and Supporting Commands)

B. Output Description
- modified EXERCISE object in database
- modified BRIEF object in database
- modified USER object in database
- modified WEAPON object in database
- modified TARGET object in database
- confirmation message on screen
- change notice sent to all affected

C. Processing Notes
- Project Engineer needs access to A-Base and E-Base

D. Volume
- two per week

E. Frequency
- daily, as needed

III. Add/Edit BRIEF data to EXERCISE
- see Update Mechanisms for BRIEF

IV. Add/Edit USER data to EXERCISE
- see Update Mechanisms for USER

V. Add/Edit WEAPON data to EXERCISE
- see Update Mechanisms for WEAPON

VI. Add/Edit TARGET data to EXERCISE
- see Update Mechanisms for TARGET

VII. Delete EXERCISE Event

A. Input Description
- scheduled exercise event to be cancelled (from PM, NUWES, Supporting Commands, User)
- EXERCISE object in database

B. Output Description
- deletion of EXERCISE object from database
- deletion of associated BRIEF objects from database
- deletion of associated USER objects from database
- deletion of associated WEAPON objects from database
- deletion of associated TARGET objects from database
- confirmation message on screen
- change notice sent to all affected

C. Volume
- four exercises per month

D. Frequency
- daily, as needed

EXERCISE OBJECT
CONTROL MECHANISMS

I. Provide Password Requirement for Security

BRIEF OBJECT
Display Mechanisms

I. Query on BRIEF

A. Output Description
- form showing all data for a given brief

B. Source Data
- BRIEF object or EXERCISE object
- Exercise Type and Event Number keyed by clerk

C. Processing Notes
- used by scheduler

D. Volume
   - three per week
E. Frequency
   - daily, as needed

II. Weekly Briefing Report
A. Output Description
   - ORACLE report form sent to all concerned
B. Source Data
   - BRIEF object or EXERCISE object
   - Exercise Type and Event Number keyed by clerk

C. Processing Notes
   - sent to all concerned when weekly schedule approved
D. Volume
   - 25 per week
E. Frequency
   - once per week

III. Modified Weekly Briefing Report
A. Output Description
   - ORACLE report form sent to all concerned
B. Source Data
   - current Weekly Briefing Report
   - BRIEF object or EXERCISE object
   - Exercise Type and Event Number keyed by clerk
C. Processing Notes
   - sent to all concerned when changes to schedule approved
D. Volume
   - 25 per week
E. Frequency
   - daily, as needed

BRIEF OBJECT
Update Mechanisms

I. Create Brief
A. Input Description
   - list of scheduled exercises (from O-Base)

- list of required briefs for scheduled exercise (from Project Manager)
- room location and availability (from E-Base)
- briefer availability (from A-Base)

B. Output Description
- new BRIEF instance in database
- new BRIEF data for weekly schedule
- new BRIEF Weekly Report

C. Processing Notes
- scheduler needs access to A-Base and E-Base

D. Volume
- minimum two briefs per exercise
- normal two exercises per day

E. Frequency
- once per week per exercise

II. Modify BRIEF Data

A. Input Description
- changes to scheduled events (from Project Manager, NUWES, Users, Supporting Commands)
- change to room location/availability (from E-Base)
- change in briefer availability (from A-Base)
- change in Brief requirement (from Project Manager)

B. Output Description
- modified BRIEF object instance in database
- modified Weekly Brief Report

C. Volume
- one per week

D. Frequency
- daily, as needed

III. Delete BRIEF

A. Input Description
- scheduled exercise to be cancelled (from Project Manager, NUWES, User)
- BRIEF objects in database

B. Output Description
- deletion of scheduled briefs from database
- updated Weekly Brief Report

- updated room availability in E-Base
- updated briefer availability in A-Base

C. Processing Notes
- scheduler needs access to A-Base and E-Base

D. Volume
- two exercises per month
- minimum two briefs per exercise

E. Frequency
- daily, as needed

BRIEF OBJECT
CONTROL MECHANISMS

I. Provide Password Requirement for Security

USER OBJECT
Update Mechanisms

I. Create USER

A. Input Description
- Exercise Type and Event Number (from monthly schedule)
- name of user to be scheduled for exercise event (from PM or NUWES)
- number of units from a given user to be scheduled for exercise event (from PM, or NUWES)
- list of authorized users (from database)

B. Output Description
- new USER object in database

C. Processing Notes
- this function adds USER data to new EXERCISE
- USER object is created by scheduler as integral part of the EXERCISE object

D. Volume
- minimum one USER per event
- normal 10 events per week

E. Frequency
   - once per week per exercise event

II. Modify USER Data
   A. Input Description
      - change in number of units of participating command
      - change in tracking equipment aboard participating unit
   B. Output Description
      - modified USER object in database
      - modified EXERCISE object in database
      - confirmation message on screen
      - change notification sent to all affected
   C. Processing Notes
      - this process changes USER data and, consequently, EXERCISE data for scheduled event
      - Project Engineer makes changes to USER object when making changes to associated EXERCISE object
   D. Volume
      - one per week
   E. Frequency
      - daily, as required

III. Delete USER
   A. Input Description
      - scheduled user to be deleted from exercise event (from PM, NUWES, User Command)
      - EXERCISE object (from database)
      - USER object (embedded in EXERCISE object)
   B. Output Description
      - deletion of indicated user from exercise event
      - deletion of indicated USER object from database
      - confirmation message on screen
      - change notice sent to all affected
   C. Processing Notes
      - USER object also deleted with deletion of entire exercise event (EXERCISE object)
      - WEAPON object (if any) should also be deleted
   D. Volume
      - two per month

E. Frequency
   - daily, as required

USER OBJECT
Display Mechanisms

* USER object is not normally displayed as a separate entity. Rather, it is embedded within the associated EXERCISE object.

USER OBJECT
CONTROL MECHANISMS

I. Provide Password Requirement for Security

WEAPON OBJECT
Update Mechanisms

I. Create WEAPON
   A. Input Description
      - Exercise Type, Event Number and Command (from monthly schedule)
      - weapon scheduled for exercise event (from PM)
      - list of authorized weapons (from database)
   B. Output Description
      - new WEAPON object in database
   C. Processing Notes
      - WEAPON object is created by scheduler as an integral part when the USER object is created
   D. Volume
      - normal two WEAPON objects per user
      - minimum one user per event
      - normal 10 events per week
   E. Frequency
      - minimum once per week per exercise event

II. Modify WEAPON Data

A. Input Description

- Exercise Type, Event Number and Command
- change in WEAPON data (from PM or Supporting Command)
- change in USER data (from PM or NUWES)

B. Output Description

- modified WEAPON object in database
- modified USER object in database
- confirmation message on screen
- change notification sent to all affected

C. Processing Notes

- this process changes WEAPON data and, consequently, USER object data for a given scheduled event
- Project Engineer makes changes to USER object when making changes to associated WEAPON object

D. Volume

- one per week

E. Frequency

- daily, as required

III. Delete WEAPON

A. Input Description

- Exercise Type, Event Number, Command Name
- weapon to be deleted (Mk)
- USER object (from database)
- WEAPON object (embedded within USER object)

B. Output Description

- deletion of indicated weapon(s) from exercise event
- deletion of indicated WEAPON object from database
- confirmation message on screen
- change notification sent to all affected

C. Processing Notes

- WEAPON object is also deleted with deletion of entire exercise event (EXERCISE object) and with the deletion of a user (USER object) from an exercise event

D. Volume
   - two per month

E. Frequency
   - daily, as required

WEAPON OBJECT
Display Mechanisms

* WEAPON object is not normally displayed as a separate entity. Rather, it is embedded within its associated USER object.

WEAPON OBJECT
CONTROL MECHANISMS

I. Provide Password Requirement for Security

TARGET OBJECT
Update Mechanisms

I. Create TARGET
   A. Input Description
      - Exercise Type and Event Number (from monthly schedule)
      - target to be scheduled for exercise event (from PM or NUWES)
      - list of targets (from database)
   B. Output Description
      - new TARGET object in database
   C. Processing Notes
      - TARGET object is created by scheduler as an integral part when the EXERCISE object is created
   D. Volume
      - minimum one TARGET per event
      - normal 10 events per week

E. Frequency
- minimum once per week per exercise event

II. Modify TARGET Data

A. Input Description
- Exercise Type and Event Number
- change in Target data (from PM or NUWES)

B. Output Description
- modified TARGET object in database
- modified EXERCISE object in database
- confirmation message on screen
- change notification sent to all affected

C. Processing Notes
- this process changes TARGET data and, consequently, EXERCISE object data for a given scheduled event
- Project Engineer makes changes to EXERCISE object when making changes to associated TARGET object

D. Volume
- one per week

E. Frequency
- daily, as required

III. Delete TARGET

A. Input Description
- Exercise Type and Event Number
- target to be deleted (from PM or NUWES)
- EXERCISE object (from database)
- TARGET object (embedded within EXERCISE object)

B. Output Description
- deletion of indicated target from exercise event
- deletion of indicated TARGET object from database
- confirmation message on screen
- change notification sent to all affected

C. Processing Notes
- TARGET object is also deleted with deletion of entire exercise event (EXERCISE object)

D. Volume
   - two per month

E. Frequency
   - daily, as required

TARGET OBJECT
Display Mechanisms

* TARGET object is not normally displayed as a separate entity. Rather, it is embedded within its associated EXERCISE object.

TARGET OBJECT
CONTROL MECHANISMS

I. Provide Password Requirement for Security

B. Results Application

OPERATIONS ANALYST APPLICATION
DISPLAY MECHANISMS

I. Monthly/Quarterly Reports
   A. Output Description
      - tables for monthly and quarterly reports on screen
      - tables for monthly and quarterly reports
   B. Source Data
      - RESULTS object
      - user input time period for tables
      - tables desired
   C. Processing Notes
      - use menus to choose which table to print and time period covered
   D. Volume
      - two per month

E. Frequency
- monthly

II. TRIMS Data

A. Output Description
- ASCII file for import into DB3+
- screen showing TRIMS data

B. Source Data
- RESULTS object

C. Processing Notes
- ensure all exercise entered into O-Base before running

D. Volume
- once per month

E. Frequency
- monthly

III. Community Reports

A. Output Description
- screen with summary data presented
- paper report of community data

B. Source Data
- RESULTS object

C. Processing Notes
- user selects time period and community to be summarized

D. Volume
- five per quarter

E. Frequency
- quarterly

OPERATIONS ANALYST APPLICATION CONTROL MECHANISMS

I. Provide Password Requirement for Security.

ENTRY CLERK APPLICATION
PLATFORM Object
Update Mechanisms

I. Create PLATFORM
   - A. Input Description
     - Exercise Summary
     - EXERCISE object
   - B. Output Description
     - Exercise Summary neat
     - new instance of PLATFORM
     - confirmation message
   - C. Processing Notes
     - Platform must correspond to event in RESULT
   - D. Volume
     - two per event
   - E. Frequency
     - once per day

II. Modify PLATFORM
   - A. Input Description
     - PLATFORM object instance from database
     - required changes
   - B. Output Description
     - modified objects
     - updated Event Summary neat
   - C. Processing Notes
     - any changes of the data in PLATFORM can cause instances to be deleted or changed from ATTACK object
   - D. Volume
     - two per week
   - E. Frequency
     - weekly

III. Add/Edit ATTACK to PLATFORM
   - A. See Update Mechanisms for ATTACK

PLATFORM OBJECT
Display Mechanisms

I. Query on PLATFORM

II. Output Description
- form showing all data for a given event
- same form as for input of data

A. Source Data
- PLATFORM object

B. Processing Notes
- all data in different objects must be joined together
- on querying a multi-valued field must show or indicate other occurrences
- on querying a non-key field must indicate other occurrences

C. Volume
- four per day

D. Frequency
- daily

III. Exercise Summary neat

A. Output Description
- computer printed exercise summary
- format to be similar to hand written exercise summary

B. Source Data
- PLATFORM object

C. Processing Notes
- used by Program Engineer to check data and paper record
- for each new instance and modified instance one is made

D. Volume
- 12 per week

E. Frequency
- daily

PLATFORM OBJECT
Control Mechanisms

I. Provide Password Requirement for Security.

II. In query mode no changes can be made and is available only to PE, and OA.

ENTRY CLERK APPLICATION
ATTACK Object
Update Mechanisms

I. Create ATTACK Object
   - A. Input Description
     - Exercise Summary
     - EXERCISE object
   - B. Output Description
     - Exercise Summary neat
     - new instance of ATTACK
     - confirmation message
   - C. Processing Notes
     - an ATTACK must be associated with a PLATFORM
   - D. Volume
     - four per event
   - E. Frequency
     - once per day

II. Modify ATTACK
   - A. Input Description
     - ATTACK object instance from database
     - required changes
   - B. Output Description
     - modified objects
     - updated Event Summary neat
   - C. Processing Notes
     - any changes of the data in ATTACK can cause instances to be deleted from or changed in LOST Object and/or WEAPON RESULTS Object.
   - D. Volume
     - two per week

E. Frequency
- weekly

III. Add/Edit LOST to ATTACK
A. See Update Mechanisms for LOST Object

IV. Add/Edit WEAPON RESULTS to ATTACK
A. See Update Mechanisms for WEAPON RESULTS

ATTACK Object
Display Mechanisms

I. Query on ATTACK
A. Output Description
- form showing all data for a given event
- same form as for input of data

B. Source Data
- ATTACK object

C. Processing Notes
- all data in different objects must be joined together
- on querying a multi-valued field must show or indicate other occurrences
- on querying a non-key field must indicate other occurrences

D. Volume
- four per day

E. Frequency
- daily

II. Exercise Summary neat
A. Output Description
- computer printed Exercise Summary
- format to be similar to hand written Exercise Summary

B. Source Data
- ATTACK object

C. Processing Notes
- used by Program Engineer to check data and paper record

- for each new instance and modified instance one is made

D. Volume
- 12 per week

E. Frequency
- daily

ATTACK OBJECT
Control Mechanisms

I. Provide Password Requirement for Security.
II. In query mode no changes can be made and is available only to PE and OA.

ENTRY CLERK APPLICATION
WEAPON RESULTS Object
Update Mechanisms

I. Create WEAPON RESULTS Object

A. Input Description
- Exercise Summary
- EXERCISE object

B. Output Description
- Exercise Summary neat
- new instance of WEAPON RESULTS
- confirmation message

C. Processing Notes
- a WEAPON must correspond to a TOF in ATTACK
- if a Platform performs a simulated attack no weapon results is created

D. Volume
- three per event

E. Frequency
- once per day

II. Modify WEAPON RESULTS
  A. Input Description
    - WEAPON RESULTS object instance from database
    - required changes
  B. Output Description
    - modified objects
    - updated Exercise Summary neat
  C. Processing Notes
    - any changes of the data in WEAPON RESULTS can cause instances to be deleted from or changed in LOST object
  D. Volume
    - two per week
  E. Frequency
    - weekly
III. Add/Edit LOST to WEAPON RESULTS
  A. See Update Mechanisms for LOST Object

WEAPON RESULTS OBJECT
Display Mechanisms

I. Query on WEAPON RESULTS
  A. Output Description
    - form showing all data for a given event
    - same form as for input of data
  B. Source Data
    - WEAPON RESULTS object
  C. Processing Notes
    - all data in different objects must be joined together
    - on querying a multi-valued field must show or indicate other occurrences
    - on querying a non-key field must indicate other occurrences
  D. Volume
    - four per day
  E. Frequency
    - daily

II. Exercise Summary neat
    A. Output Description
        - computer printed Exercise Summary
        - format to be similar to hand written Exercise Summary
    B. Source Data
        - WEAPON RESULTS object
    C. Processing Notes
        - used by Program Engineer to check data and paper record
        - for each new instance and modified instance one is made
    D. Volume
        - 12 per week
    E. Frequency
        - daily

WEAPON RESULTS OBJECT
Control Mechanisms

I. Provide Password Requirement for Security.
II. In query mode no changes can be made and is available only to PE and OA.

ENTRY CLERK APPLICATION
TARGET RESULTS Object
Update Mechanisms

I. Create TARGET RESULTS Object
    A. Input Description
        - Exercise Summary
        - EXERCISE object
    B. Output Description
        - Exercise Summary neat
        - new instance of TARGET RESULTS
        - confirmation message

C. Processing Notes
   - a target must correspond to event in RESULT
D. Volume
   - one per event
E. Frequency
   - once per day

II. Modify TARGET RESULTS
A. Input Description
   - TARGET RESULTS object instance from database
   - required changes
B. Output Description
   - modified objects
C. Updated Exercise Summary neat
D. Processing Notes
   - any changes of the data in TARGET RESULTS can cause instances to be deleted from or changed in LOST object
E. Volume
   - two per week
F. Frequency
   - weekly

III. Add/Edit LOST to TARGET RESULTS
A. See Update Mechanisms for LOST

TARGET RESULTS OBJECT
Display Mechanisms

I. Query on TARGET RESULTS
A. Output Description
   - form showing all data for a given event
   - same form as for input of data
B. Source Data
   - TARGET RESULTS object
C. Processing Notes
   - all data in different objects must be joined together
   - on querying a multi-valued field must show or indicate other occurrences

- on querying a non-key field must indicate other occurrences

D. Volume
- four per day

E. Frequency
- daily

II. Exercise Summary neat

A. Output Description
- computer printed Exercise Summary
- format to be similar to hand written Exercise Summary

B. Source Data
- TARGET RESULTS object

C. Processing Notes
- used by Program Engineer to check data and paper record
- for each new instance and modified instance one is made

D. Volume
- 12 per week

E. Frequency
- daily

TARGET RESULTS OBJECT
Control Mechanisms

I. Provide Password Requirement for Security.

II. In query mode no changes can be made and is available only to PE and OA.

ENTRY CLERK APPLICATION
LOST Object
Update Mechanisms

I. Create LOST

A. Input Description
- Exercise Summary
- EXERCISE object

B. Output Description
   - Exercise Summary neat
   - new instance of LOST
   - confirmation message

C. Processing Notes
   - a LOST must correspond to a MK and Serial in WEAPON RESULTS or TARGET RESULTS

D. Volume
   - four per year

E. Frequency
   - once per quarter

II. Modify LOST

A. Input Description
   - LOST object instance from database
   - required changes

B. Output Description
   - modified objects
   - updated event summary neat

C. Processing Notes
   - any changes of the data in WEAPON RESULTS or TARGET RESULTS can cause instances to be deleted or changed from LOST object

D. Volume
   - four per year

E. Frequency
   - semi-annually

LOST OBJECT
Display Mechanisms

I. Query on LOST

A. Output Description
   - form showing all data for a given event
   - same form as for input of data

B. Source Data
   - LOST object

C. Processing Notes
   - all data in different objects must be joined together

- on querying a multi-valued field must show or indicate other occurrences
- on querying a non-key field must indicate other occurrences

D. Volume
- two per month

E. Frequency
- monthly

II. Exercise Summary neat

A. Output Description
- computer printed exercise summary
- format to be similar to hand written exercise summary

B. Source Data
- LOST object

C. Processing Notes
- used by Program Engineer to check data and paper record
- for each new instance and modified instance one is made

D. Volume
- 12 per week

E. Frequency
- daily

LOST OBJECT
Control Mechanisms

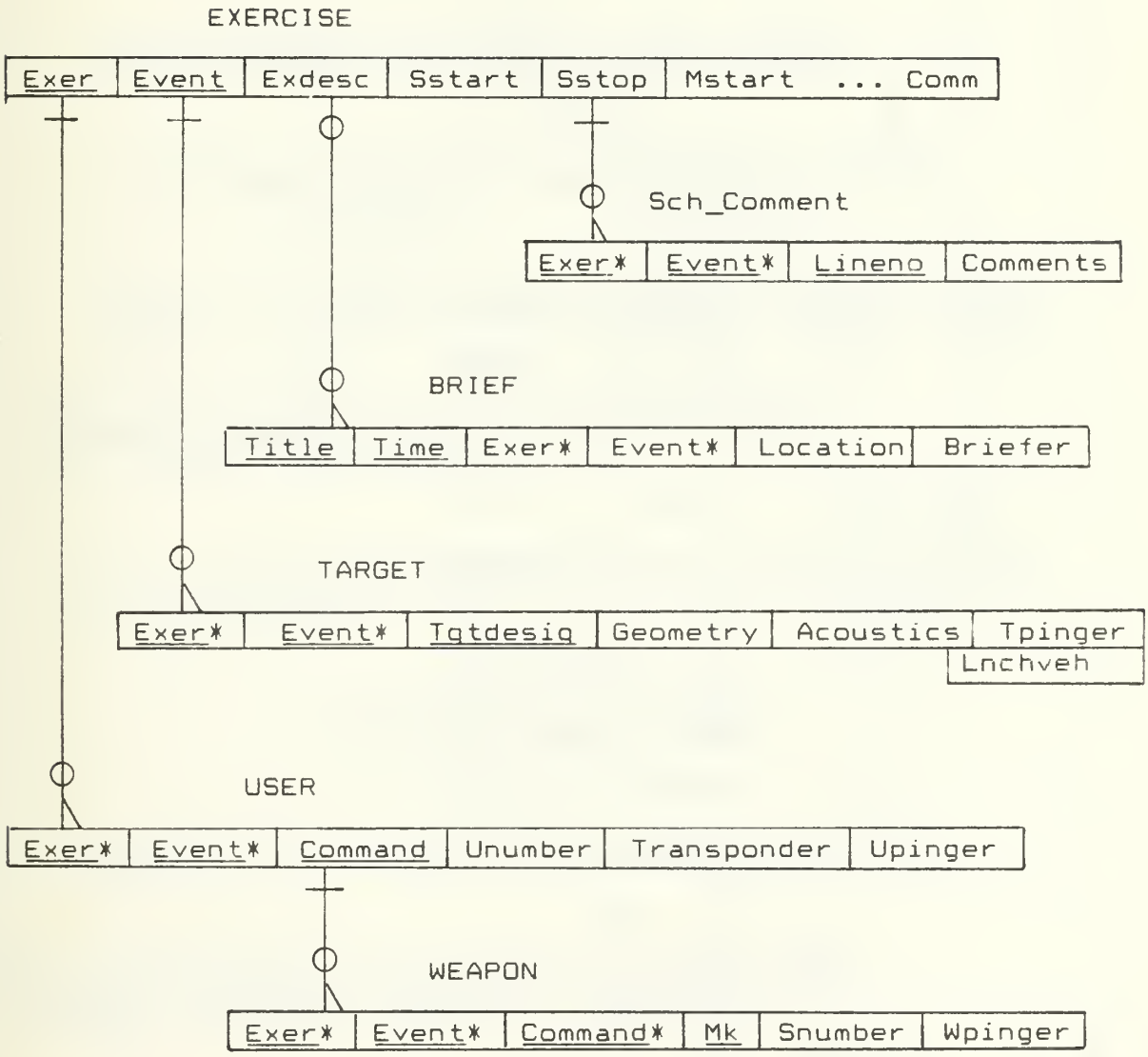
I. Provide Password Requirement for Security.

II. In query mode no changes can be made and is available only to PE, and OA.

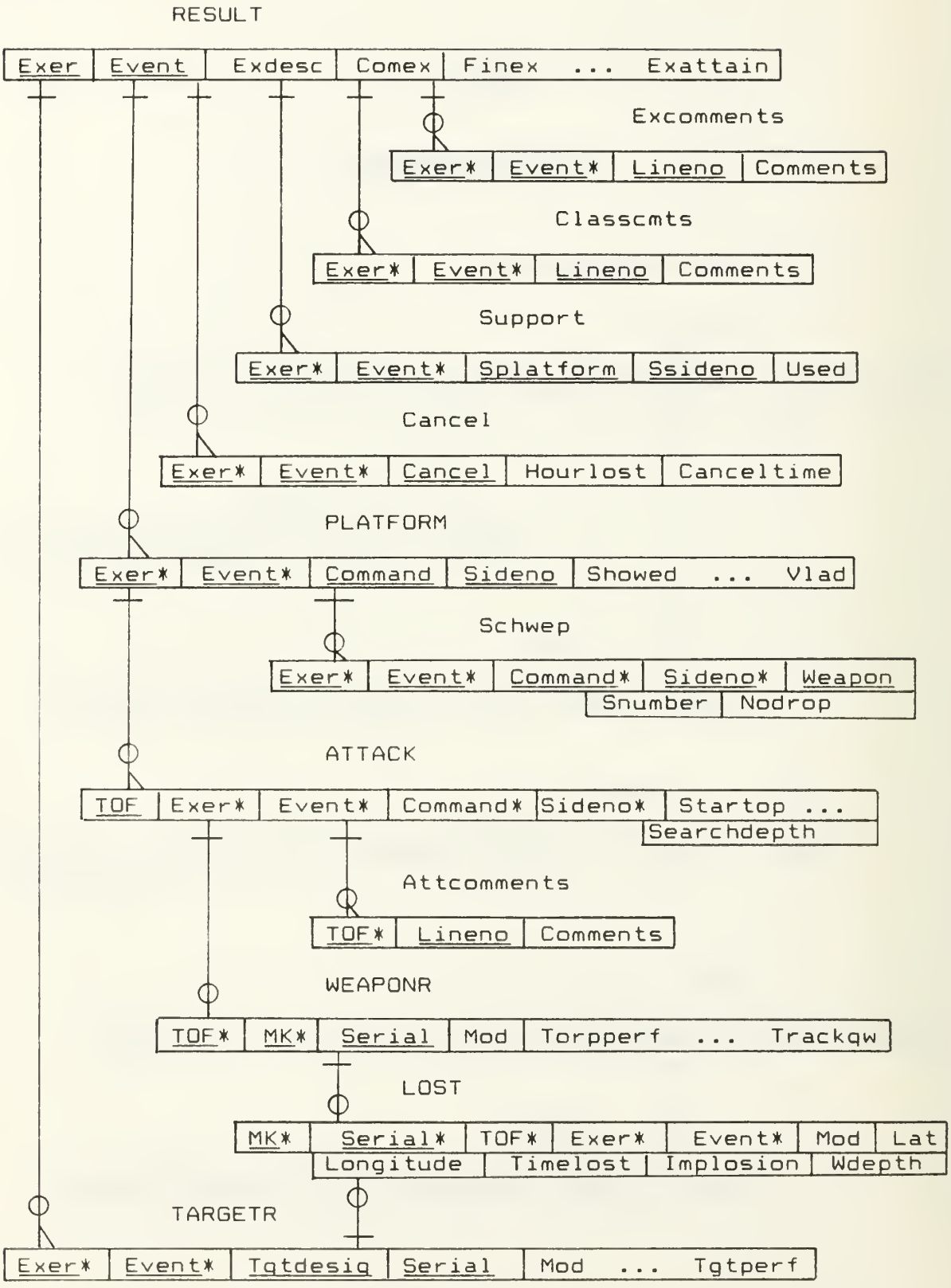
APPENDIX F

RELATION DIAGRAMS

A. Schedule Application



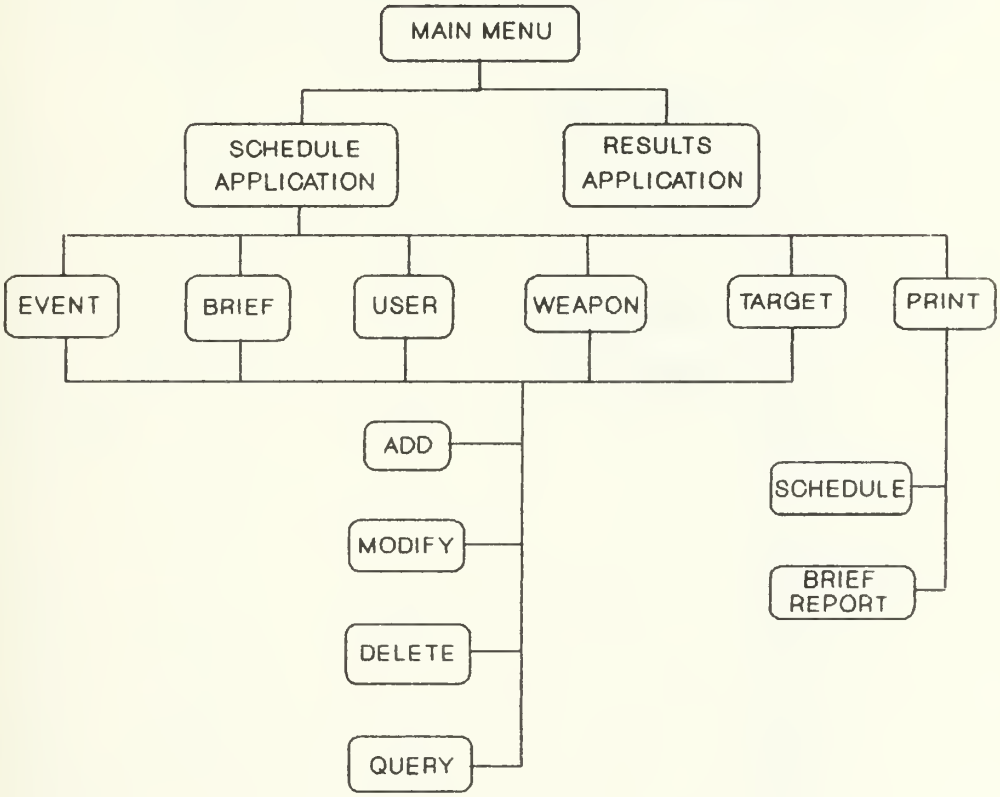
B. Results Application



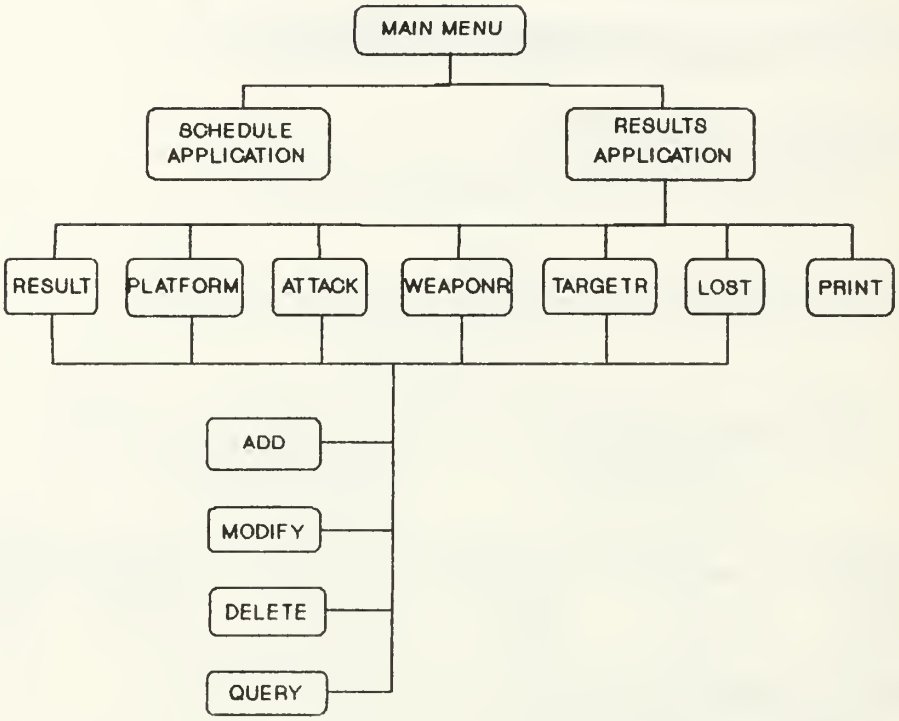
APPENDIX G

LOGICAL MENU STRUCTURE

A. SCHEDULE APPLICATION



B. RESULTS APPLICATION



APPENDIX H

ORACLE TABLES

A. APPLICATION TABLES

EXERCISE TABLE

Name	Null?	Type
EXER	NOT NULL	CHAR(4)
EVENT	NOT NULL	NUMBER(5)
EXDESC		CHAR(12)
SSTART		CHAR(14)
SSTOP		CHAR(14)
MSTART		CHAR(14)
MSTOP		CHAR(14)
OPAREA		CHAR(6)
TRACKTYPE		CHAR(1)
PROJENG		CHAR(10)
OPCON		CHAR(10)
OPANAL		CHAR(10)
SAFEOFF		CHAR(10)
TPRIREC		CHAR(7)
TSECREC		CHAR(7)
WPRIREC		CHAR(7)
WSECREC		CHAR(7)
HAULBACK		CHAR(7)
GRNREQ		CHAR(1)
GRNSENT		CHAR(1)
SUBRLX		CHAR(1)
AIRSPACE		CHAR(5)
COMM		CHAR(3)
EXCLUS		CHAR(1)

SCH_COMMENT TABLE

Name	Null?	Type
EXER	NOT NULL	CHAR(4)
EVENT	NOT NULL	NUMBER(5)
LINENO	NOT NULL	NUMBER(3)
COMMENTS		CHAR(75)

BRIEF TABLE

Name	Null?	Type
EXER	NOT NULL	CHAR(4)
EVENT	NOT NULL	NUMBER(5)
TITLE	NOT NULL	CHAR(20)
TIME		CHAR(14)
LOCATION		CHAR(20)
BRIEFER		CHAR(10)

TARGET TABLE

Name	Null?	Type
EXER	NOT NULL	CHAR(4)
EVENT	NOT NULL	NUMBER(5)
TGTDESIG	NOT NULL	CHAR(8)
GEOMETRY		CHAR(4)
ACOUSTICS		CHAR(1)
TPINGER		CHAR(4)
LNCHVEH		CHAR(8)

USER TABLE

Name	Null?	Type
EXER	NOT NULL	CHAR(4)
EVENT	NOT NULL	NUMBER(5)
COMMAND	NOT NULL	CHAR(8)
UNUMBER		NUMBER(1)
TRANSPONDER		CHAR(4)
UPINGER		CHAR(4)

WEAPON TABLE

Name	Null?	Type
EXER	NOT NULL	CHAR(4)
EVENT	NOT NULL	NUMBER(5)
MK	NOT NULL	CHAR(5)
COMMAND	NOT NULL	CHAR(8)
SNUMBER		NUMBER(1)
WPINGER		CHAR(4)

RESULT TABLE

Name	Null?	Type
EXER	NOT NULL	CHAR(4)
EVENT	NOT NULL	NUMBER(5)
EXDESC		CHAR(12)
COMEX		CHAR(14)
FINEX		CHAR(14)
SSTART		CHAR(14)
SSTOP		CHAR(14)
OPAREA		CHAR(6)
VISIBLE		NUMBER(2)

SEASTATE		NUMBER(1)

EXCOMMENTS TABLE

Name	Null?	Type
EXER	NOT NULL	CHAR(4)
EVENT	NOT NULL	NUMBER(5)
LINENO		NUMBER(3)
COMMENTS		CHAR(75)

CLASSCMTS TABLE

Name	Null?	Type
EXER	NOT NULL	CHAR(4)
EVENT	NOT NULL	NUMBER(5)
LINENO		NUMBER(3)
COMMENTS		CHAR(75)

SUPPORT TABLE

Name	Null?	Type
EXER	NOT NULL	CHAR(4)
EVENT	NOT NULL	NUMBER(5)
SPLATFORM		CHAR(8)
SSIDENO		CHAR(7)
USED		CHAR(1)

CANCEL TABLE

Name	Null?	Type
EXER	NOT NULL	CHAR(4)
EVENT	NOT NULL	NUMBER(5)
CANCEL		CHAR(25)
HOURLOST		NUMBER(2,1)
CANCELTIME		CHAR(14)

PLATFORM TABLE

Name	Null?	Type
EXER	NOT NULL	CHAR(4)
EVENT	NOT NULL	NUMBER(5)
COMMAND		CHAR(8)
SIDENO		CHAR(7)
SHOWED		CHAR(1)
TRACKQP		NUMBER(3)
LOFAR		NUMBER(3)
DIFAR		NUMBER(3)
DICAS		NUMBER(3)
VLAD		NUMBER(3)

SCHWEP TABLE

Name	Null?	Type
EXER	NOT NULL	CHAR(4)
EVENT	NOT NULL	NUMBER(5)
COMMAND		CHAR(8)
SIDENO		CHAR(7)
WEAPON		CHAR(5)
SNUMBER		NUMBER(2)

NODROP		CHAR(1)

ATTACK TABLE

Name	Null?	Type
EXER	NOT NULL	CHAR(4)
EVENT	NOT NULL	NUMBER(5)
TOF		CHAR(14)
COMMAND		CHAR(8)
SIDENO		CHAR(7)
STARTOP		CHAR(14)
TGTCOURSE		NUMBER(3)
TGTBY		NUMBER(3)
TGTSPEED		NUMBER(2)
TGTRANGE		NUMBER(5)
TGTDEPTH		NUMBER(4)
TGTMANTIME		NUMBER(2,1)
TGTMANCOURSE		NUMBER(3)
TGTMANSPEED		NUMBER(2)
SBY		NUMBER(3)
SCOURSE		NUMBER(3)
SSPEED		NUMBER(2)
SRANGE		NUMBER(5)
HEADTOF		NUMBER(3)
SPEEDTOF		NUMBER(3)
ALTITUDE		NUMBER(5)
MODECODE		CHAR(6)
SONARSET		CHAR(7)
CONTACT		CHAR(12)
DELIVERY		CHAR(5)
SPLASHBY		NUMBER(3)
SPLASHRH		NUMBER(5)
ACQUIRED		CHAR(1)
ATTACKEVAL		CHAR(10)
SEARCHDEPTH		NUMBER(4)
DOPPLER		CHAR(1)
PH		NUMBER(1,2)

ATTCOMMENTS TABLE

Name	Null?	Type
TOF	NOT NULL	CHAR(14)
LINENO		NUMBER(3)
COMMENTS		CHAR(75)

WEAPONR TABLE

Name	Null?	Type
TOF		CHAR(14)
MK		CHAR(5)
SERIAL		CHAR(7)
MOD		CHAR(5)
TORPPERF		CHAR(20)
SEARCHT		NUMBER(3)
WEPREC		CHAR(1)
RECVEH		CHAR(8)
RECTIME		NUMBER(2)
BBVEH		CHAR(8)
TRACKQW		NUMBER(3)

LOST TABLE

Name	Null?	Type
MK		CHAR(5)
SERIAL		CHAR(7)
TOF		CHAR(14)
EXER		CHAR(4)
EVENT		NUMBER(5)
MOD		CHAR(5)
LAT		CHAR(10)
LONGITUDE		CHAR(10)
IMPLOSION		NUMBER(4)
WDEPTH		NUMBER(5)
TIMELOSS		CHAR(14)
FROMBLOCK		CHAR(1)

TARGETR TABLE

Name	Null?	Type
EXER		CHAR(4)
EVENT		NUMBER(5)
TGTDESIG		CHAR(8)
SERIAL		CHAR(7)
TGTPERF		CHAR(20)
GEOMETRY		CHAR(4)
TOF		CHAR(14)
TGTREC		CHAR(1)
RECVEH		CHAR(8)
DB		NUMBER(3)
FREQ		CHAR(2)
TRACKQT		NUMBER(3)
MOD		CHAR(5)

B. LOOK-UP TABLES

CANCELLOOKUP

Name	Null?	Type
CANCELLOOKUP		CHAR(25)

CANCEL (Legal Values)
ASSET AVAILABILITY
FOULED RANGE
INSTRUMENTATION
WEATHER
NO AIR TRACKING
NO SHOW

CONTACTLOOKUP

Name	Null?	Type
CONTACT		CHAR(12)

CONTACT (Legal Values)	
MAD	SURFACT
DIFAR	IR
DICASS	VECTAC
RANGE ONLY	SPHERICAL
LOFAR	HULL
DIPPER	TOWED ARRAY
SURFPASS	

DELIVERYLOOKUP

Name	Null?	Type
DELIV		CHAR(5)

DELIVERY (Legal Values)
SVTT
RTT
HOVER
FLYIN
TT
ASROC

EVALLOOKUP

Name	Null?	Type
EVAL		CHAR(10)

EVAL (Legal Values)
HIT
PROB HIT
PROB MISS
MISS
UNKNOWN

LINENUMBER

Name	Null?	Type
TABLENAME		CHAR(15)
EXER		CHAR(4)
EVENT		CHAR(5)
LINENO		NUMBER(3)

TABLENAME	EXER	EVENT	LINENO
SCH_COMMENT	A601	89004	1
SCH_COMMENT	A601	89005	1
SCH_COMMENT	A612	88082	7
SCH_COMMENT	S610	89001	1

PERFLOOKUP

Name	Null?	Type
PERF		CHAR(20)

PERF (Legal Values)
NORMAL RUN
ERRATIC RUN
DID NOT RUN
SANK AT LAUNCH POINT
SANK AT END OF RUN
DAMAGED
SEE COMMENTS

RECOVLOOKUP

Name	Null?	Type
RECOV		CHAR(4)

RECO (Legal Values)
TWR
HC-1

SONARLOOKUP

Name	Null?	Type
SONAR		CHAR(7)

SONAR (Legal Values)
ACTIVE
PASSIVE
COMBO
ACTPASS

APPENDIX I

VARIABLE ASSOCIATIONS

EXERCISE OBJECT

Descriptive Name	Domain Name	Variable Name
Exercise Type	Exer	EXER
Event Number	Event	EVENT
Exercise Description	Exdesc	EXDESC
Schedule Start Time	Time-Schstart	SSTART
Schedule Stop Time	Time-Schstop	SSTOP
MOCS Start Time	Time-MOCS Start	MSTART
MOCS Stop Time	Time-MOCS Stop	MSTOP
Operational Area	Oparea	OPAREA
Exclusive Use	Exclusive	EXCLUS
Primary Target Recovery Vehicle	Recovery-Pri	TPRIREC
Secondary Target Recovery Vehicle	Recovery-Sec	TSECREC
Primary Weapon Recovery Vehicle	Recovery-Pri	WPRIREC
Secondary Weapon Recovery Vehicle	Recovery-Sec	WSECREC
Weapon Haulback Vehicle	Recovery-Haulback	HAULBACK
Tracking Type	Tracking Type	TRACKTYPE
Project Engineer	Personnel-Pe	PROJENG
Operation Controller	Personnel-Oc	OPCON
Operation Analyst	Personnel-Oa	OPANAL
Safety Officer	Personnel-So	SAFEOFF
Green Required	Message-Req	GRNREQ
Green Sent	Message-Sent	GRNSENT
Submarine Relaxation Message	Message-Sub	SUBRLX
Air Space	Air Space	AIRSPACE
Communications	Communications	COMM
Comments	Comments	COMMENTS

BRIEF: BRIEF object; MV
USERS: USER object; MV
TARGET: TARGET object; MV
RESULTS: RESULTS object

BRIEF OBJECT

Descriptive Name	Domain Name	Variable Name
Brief Title	Brief Title	TITLE
Brief Time	Time-Brief	TIME
Location	Location	LOCATION
Briefer	Personnel-Brief	BRIEFER

USERS OBJECT

Descriptive Name	Domain Name	Variable Name
Exercise Type	Exer	EXER
Event Number	Event	EVENT
Command Name	Command	COMMAND
Number of Units	Number-U	UNUMBER
EATS Transponder	Transponder	TRANSPONDER
Pinger Channel	Pinger-U	UPINGER
WEAPON: WEAPON object;	MV	

TARGET OBJECT

Descriptive Name	Domain Name	Variable Name
Exercise Type	Exer	EXER
Event Number	Event	EVENT
Target Designation	Target Designation	TGTDESIG
Geometry	Geometry Code	GEOMETRY
Acoustics	Acoustics	ACOUSTICS
Pinger	Pinger-T	TPINGER
Launch Vehicle	Launch	LNCHVEH

WEAPON OBJECT

Descriptive Name	Domain Name	Variable Name
Mk	Mk	MK
Command Name	Command	COMMAND
Number Scheduled	Number-S	SNUMBER
Pinger	Pinger-W	WPINGER

RESULTS OBJECT

Descriptive Name		Domain Name	Variable Name
Exercise Type		Exer	EXER
Event Number		Event	EVENT
Exercise Description		Exdesc	EXDESC
Exercise Attainment		Exattain	EXATTAIN
Comex		Time-C	COMEX
Finex		Time-F	FINEX
Scheduled Start Time		Time-Schstart	SSTART
Scheduled Stop Time		Time-Schstop	SSTOP
Operational Area		Oparea	OPAREA
Visibility		Visible	VISIBLE
Sea State		Seastate	SEASTATE
Reason Canceled	MV	Canceled	CANCEL
Hours Lost	MV	Hours	HOURLOST
Cancel Start Time	MV	Time-Cancel	CANCELTIME
Support Platform	MV	Command	SPLATFORM
Support Side Number	MV	Sidenumber	SSIDENO
Support Used	MV	Used	USED
Classified Comments		Comments	COMMENTS
Unclassified Comments		Comments	COMMENTS

PLATFORM; PLATFORM object; MV

TARGET RESULTS; TARGET RESULTS object; MV

PLATFORM OBJECT

Descriptive Name		Domain Name	Variable Name
Exercise Type		Exer	EXER
Event Number		Event	EVENT
Command Name		Command	COMMAND
Side Number		Sidenumber	SIDENO
Showed Up		Showed	SHOWED
Track Quality		Track Quality	TRACKQP
Lofar		Sonobuoy no.	LOFAR
Difar		Sonobuoy no.	DIFAR
Dicass		Sonobuoy no.	DICAS
Vlad		Sonobuoy no.	VLAD
Weapon Assigned	MV	Mk	WEAPON
Number of Weapons Scheduled	MV	Number-S	SNUMBER
No Drop	MV	Nodrop	NODROP

ATTACK; ATTACK object; MV

TARGET RESULTS OBJECT

Descriptive Name	Domain Name	Variable Name
Exercise Type	Exer	EXER
Event Number	Event	EVENT
Target Designation	Target Designation	TGTDESIG
Mod	Mod	MOD
Serial Number	Serial Number	SERIAL
Target Performance	Target Performance	TGTPERF
Geometry	Geometry Code	GEOMETRY
Launch Time	Time-L	TOF
Target Recovered	Recovered	TGTREC
Recovery Vehicle	Recovery	RECVEH
Sound Level	Sound	DB
Frequency	Frequency	FREQ
Track Quality	Track Quality	TRACKQT
LOST; LOST object		

WEAPON RESULTS OBJECT

Descriptive Name	Domain Name	Variable Name
Time of Fire	TOF	TOF
Mk	Mk	MK
Mod	Mod	MOD
Serial Number	Serial Number	SERIAL
Torpedo Performance	Torpperf	TORPPERF
Search Time	Search-Seconds	SEARCH
Weapon Recovered	Recovered	WEPREC
Recovery Vehicle	Recovery	RECVEH
Recovery Time	Minutes-Recover	RECTIME
Bring Back Vehicle	Recovery	BBVEH
Track Quality	Track Quality	TRACKQW
LOST; LOST object		

LOST OBJECT

Descriptive Name	Domain Name	Variable Name
Mk	Mk	MK
Mod	Mod	MOD
Serial Number	Serial Number	SERIAL
Time Lost	Time-Lost	TIMELOST
Latitude	Lat	LAT
Longitude	Long	LONGITUDE
Implosion	Depth-Imp	IMPLOSION
Water Depth	Depth-Water	WDEPTH

ATTACK OBJECT

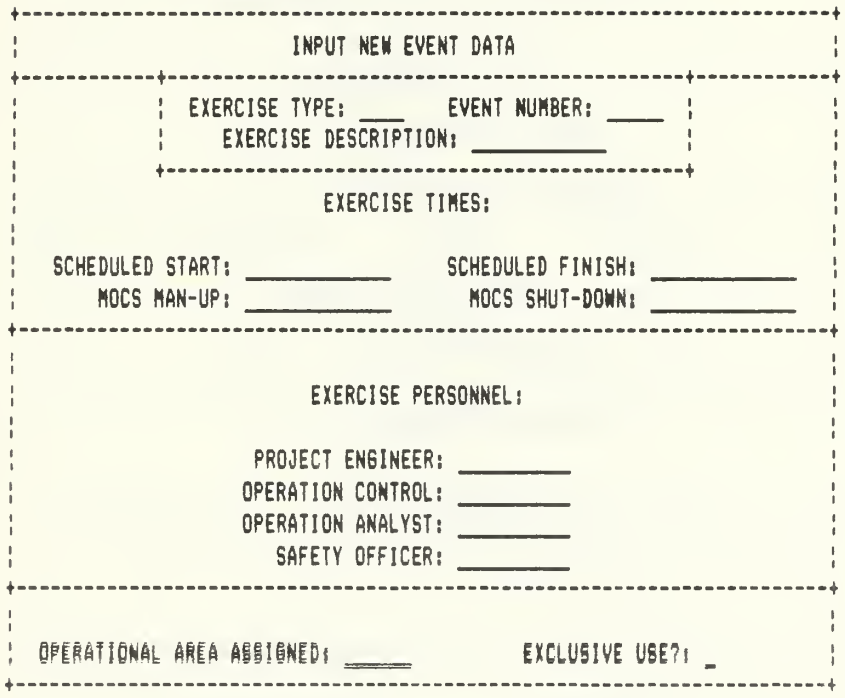
Descriptive Name		Domain Name	Variable Name
Time of Fire		Time-Tof	TOF
Command Name		Command	COMMAND
Side Number		Sidenumber	SIDENO
Start Op		Time-Start-time	STARTOP
Actual Target Course		Compass-Tc	TGTCOURSE
Actual Target Bearing		Compass-Tb	TGTBY
Actual Target Speed		Kts-Ts	TGTSPEED
Actual Target Range		Range-T	TGTRANGE
Actual Target Depth		Depth-T	TGTDEPTH
Target Maneuver Time		Minutes-Maneuver	TGTMANTIME
Target Maneuver Course		Compass-Tm	TGTMANCOURSE
Target Maneuver Speed		Kts-Tm	TGTMANSPEED
Target Doppler		Doppler	TGTDOPLER
Solution Bearing		Compass-Sb	SBY
Solution Course		Compass-Sc	SCOURSE
Solution Speed		Kts-S	SSPEED
Solution Range		Range-S	SRANGE
Heading at TOF		Compass-Heading	HEADTOF
Speed at TOF		Speed	SPEEDTOF
Altitude		Height	ALTITUDE
Mode		Modecode	MODECODE
Sonar Setting		Sonar	SONARSET
Contact Type		Contact Code	CONTACT
Delivery Method		Delivery Code	DELIVERY
Bearing to Splash Point		Compass-Splashpt	SPLASHBY
Range to Splash Point		Range-Splashpt	SPLASHRH
Acquired		Acquired	ACQUIRED
Eval of Attack		Eval	ATTACKEVAL
Search Depth		Depth-S	SEARCHDEPTH
Comments	MV	Comments	COMMENTS
Line Number	MV	Linenumber	LINENO

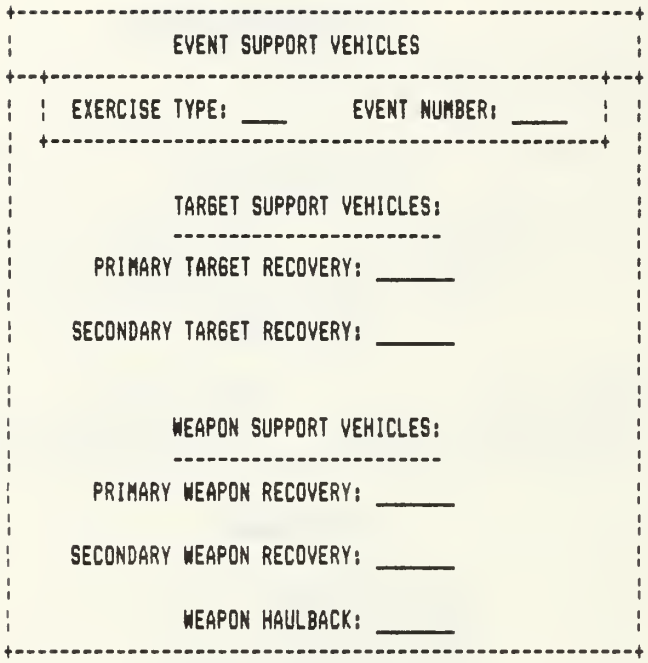
WEAPON RESULTS; WEAPON RESULTS object;

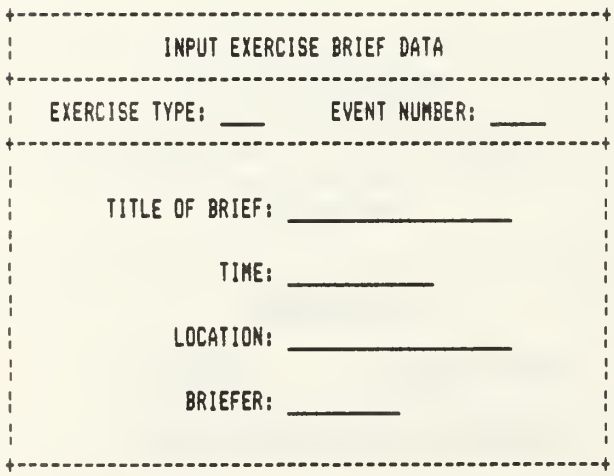
APPENDIX J

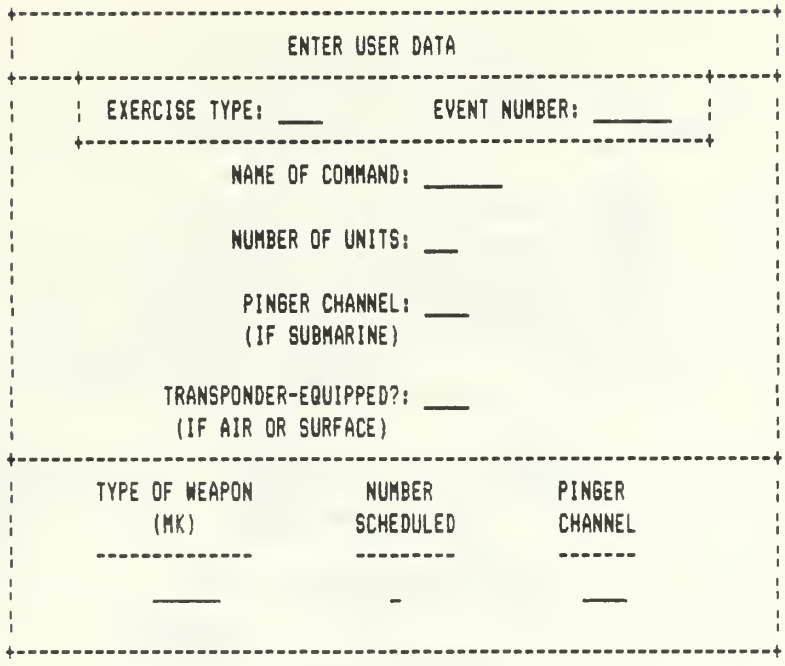
SCREEN DESIGNS

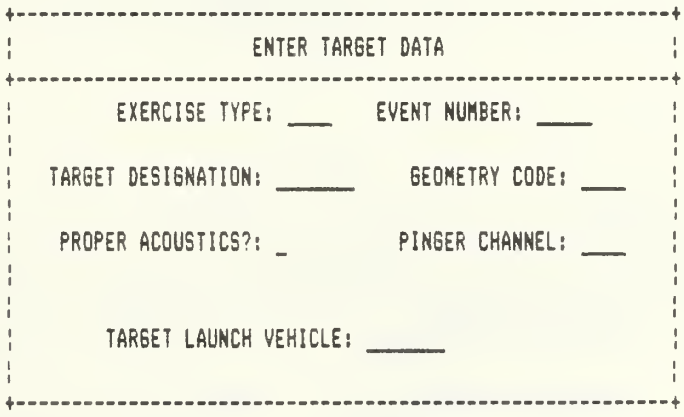
A. SCHEDULE APPLICATION

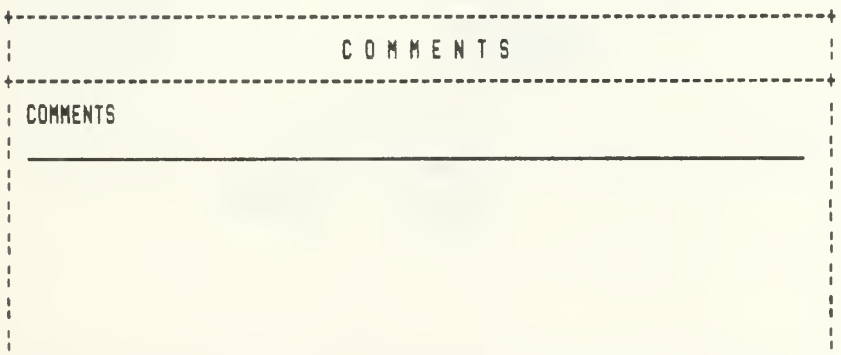



EVENT SUPPORT VEHICLES
EXERCISE TYPE: ___
EVENT NUMBER: ____
TARGET SUPPORT VEHICLES:
PRIMARY TARGET RECOVERY: _____
SECONDARY TARGET RECOVERY: _____
WEAPON SUPPORT VEHICLES:
PRIMARY WEAPON RECOVERY: _____
SECONDARY WEAPON RECOVERY: _____
WEAPON HAULBACK: _____

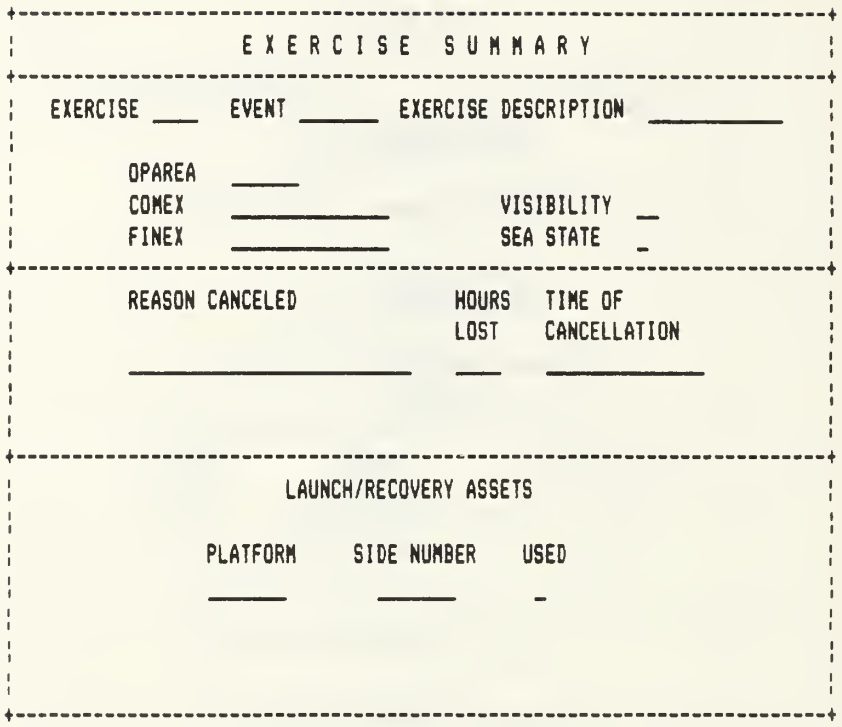

INPUT EXERCISE BRIEF DATA
EXERCISE TYPE: ___
EVENT NUMBER: ____
TITLE OF BRIEF: _____
TIME: _____
LOCATION: _____
BRIEFER: _____

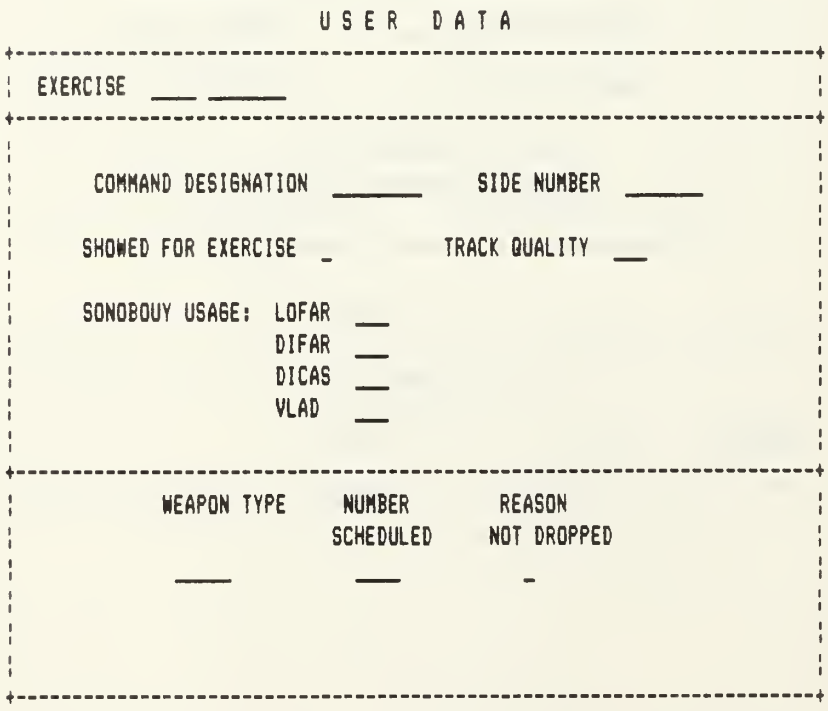

ENTER USER DATA
EXERCISE TYPE: ___
EVENT NUMBER: _____
NAME OF COMMAND: _____
NUMBER OF UNITS: __
PINGER CHANNEL: ___
(IF SUBMARINE)
TRANSPONDER-EQUIPPED?: ___
(IF AIR OR SURFACE)
TYPE OF WEAPON (MK)
NUMBER SCHEDULED
PINGER CHANNEL


ENTER TARGET DATA
EXERCISE TYPE: ___
EVENT NUMBER: ____
TARGET DESIGNATION: _____
GEOMETRY CODE: ___
PROPER ACOUSTICS?: _
PINGER CHANNEL: ___
TARGET LAUNCH VEHICLE: _____


C O M M E N T S
COMMENTS

B. RESULTS APPLICATION





ATTACK DATA

```
+-------------------------------------------------------------------+
| EXERCISE ____ ____   COMMAND ______   SIDE NUMBER ______          |
+-------------------------------------------------------------------+
|    TOF _____________          START ATTACK RUN _____________      |
+--------------------+--------------------+-------------------------+
| TARGET DATA        | SOLUTION DATA      | FIRING UNIT DATA        |
|                    |                    |                         |
| COURSE    ___      | COURSE    ___      | COURSE    ___           |
| BEARING   ___      | BEARING   ___      | SPEED     ___           |
| RANGE     ____     | RANGE     ____     | ALTITUDE  ____          |
| SPEED     __       | SPEED     __       |                         |
| DEPTH     ___      |                    |                         |
+--------------------+--------------------+-------------------------+
                     |                    | DOPPLER  _              |
                     | MANEUVER:          |                         |
                     |   TIME     ___     +-------------------------+
                     |   COURSE   ___     |
                     |   SPEED    __      |
                     +--------------------+
```

ATTACK DATA

```
+-------------------------------------------------------------------+
| EXERCISE ___ ____  UNIT ______ SIDE NUMBER ______ TOF _____________ |
+-------------------------------------------------------------------+
|   FIRING DATA                          RESULTS                    |
|                                                                   |
| CONTACT TYPE   _____________           ACQUIRED        _          |
| ATTACK MODE    _____                   ATTACK EVAL     _________  |
| SONAR SETTING  _______                 PH              ___        |
| DELIVERY MODE  ____                    SPLASH BEARING  ___        |
| SEARCH DEPTH   ___                     SPLASH RANGE    ____       |
+-------------------------------------------------------------------+
```

ATTACK COMMENTS:

W E A P O N D A T A

EXERCISE ___ ____ UNIT _____ SIDE NUMBER _____ TOF _____

MK ____ MOD ____ SERIAL _____

TRACK QUALITY __ TORPEDO PERFORMANCE _____

WEAPON RECOVERED(Y,N) _

SEARCH TIME ____ RECOVER VEHICLE _____

TIME TO RECOVER ___ BRING BACK VEHICLE _____

T A R G E T D A T A

EXERCISE ___ ____

TARGET DESIGNATION _____ MOD ____ SERIAL NUMBER _____

LAUNCH TIME _____ TRACK QUALITY __

PERFORMANCE _____ GEOMETRY ___

SOUND LEVEL ____ FREQUENCY BAND _

RECOVERED(Y,N) _ RECOVERY VEHICLE _____

L O S T T A R G E T S A N D W E A P O N S

EXERCISE ___ _____ MK ____ MOD ____ SERIAL NUMBER _____

TOF _____

TIME OF LOSS _____

LATITUDE _____

LONGITUDE _____

IMPLOSION DEPTH _____

WATER DEPTH _____

UNCLASSIFIED COMMENTS

EXERCISE
COMMENTS

CLASSIFIED COMMENTS

EXERCISE
COMMENTS

APPENDIX K

SYSTEM USER MANUAL

Introduction:

This manual introduces and explains the operation of the two O-Base applications. These applications are designed to minimize the effort required for data entry. They also provide the ability to modify, delete and query the database. The Schedule application stores the event data that make up the schedule, and provides an easy method for making changes to the event data as circumstances change or more information becomes available. The Results application stores information about what occurred during an event. This information can then be queried or used to produce various reports.

About This Manual:

This manual is designed to guide you to in using the system. It assumes that you have completed the SQL*FORMS Operator's Guide tutorial, and are familiar with the various terms used in that manual. If you are unfamiliar with the terms block, record, form and query, refer to the SQL*FORMS Operators's Guide.

This user manual contains two parts, Part I covers the Schedule application and Part II the Results application. Each part is divided into seven sections: 1) Introduction, 2) Description of the form, 3) Add procedures, 4) Modify procedures, 5) Delete procedures, 6) Querying the database, and 7) Detailed description of each field. The most useful section will be the detailed field descriptions, because it describes how each field operates. This section should be kept handy as a reference even, for experienced operators.

Conventions and General Operating Procedures:

- When a function key is described in the manual, the Oracle name will be given first, followed by the IBM/MS-DOS keyboard name enclosed in < >.
- When entering data into a field, a Next Field <Enter> moves the cursor to the next available field.
- When entering a field, a short help message appears at the bottom of the screen.

Starting the Applications:

To start the application, make sure that Oracle was started properly. Then, type either **Schedule** or **Results** followed by a carriage return <cr>. This will start the appropriate application. You will then be asked for your name and password. Enter your name and password followed by a carriage return <cr>. If you do not have or forget your password see your Database Administrator.

PART I SCHEDULE APPLICATION

1. Introduction:

This application stores each scheduled event into the database so that a schedule can be constructed. The procedure for entering data has been made as simple as possible. You type in the data you wish to enter and then press the Enter <cr> key. The most important information entered is the exercise type and the event number, since this information determines the event to which you are referring. Upon entering a new event the system will automatically give you an event number based on the year in which it is scheduled. Once the system knows what event to which you are referring, you may either add, modify, or delete information from that event.

2. Form Description:

The schedule contains six blocks: Exercise, Brief, Users, Weapon, Target, and Comments. These blocks are the basic subdivision used by SQL*FORMS. This grouping of information allows for quicker navigation. Using the Next Block <page down> and Previous Block <page up> any block may be accessed quickly.

The exercise data block is the first block and contains three pages of data. The first page contains the exercise, event number and scheduled start and stop times along with other general event information. The second page contains tracking requirements, and message information, while the third contains information on recovery vehicles.

The next block is the Brief block. It contains information on briefs associated with the event. This block is set up to allow multiple briefs to be entered for an event. Entering nothing into the block will move you directly to the User Block.

The User block contains information about the commands scheduled to use the range during this event. Many users can be involved in a single event. To view other users, the Next Record key <down arrow> can be used to scroll both the user and the weapons associated with it. Entering a blank in the command field will move you to the Target block, while next block will move you to the Weapon block.

The Weapon block is on the same page as the User block. This arrangement allows the weapons data to be viewed with their respective user. This block allows you to view two weapons at a time and, as indicated above, Next Record <down arrow> and Previous Record <up arrow> can be use to scroll the records.

The Target block, located on page four, allows entry of data pertaining the target scheduled for an event.

The last block is the Comments block which contains notes on the event. Upon completion of this block, all data entered is automatically stored into the database.

3. Add Procedures:

This section describes how new data is entered into the system. This is a general description of the process and should be used in conjunction with the detailed field descriptions. Before starting to enter new data, you should have at hand all of the information you are going to enter, particularly the exercise, user, and target information.

Step 1. Start at the top of the form (If not at top of form, select Previous Block <page up> until you get a message saying "top of form" on the status line). Select Create Record <F9>, which sets up the form to enter a new record.

Step 2. Enter your exercise type and the last two digits of the year in which the event will occur. This allows the system to calculate the proper event number.

Step 3. Enter your data, field by field as described in the detailed field descriptions.

Step 4. Once you are in the Brief Block enter your information regarding the first brief. After entering the briefer, the block will clear and the cursor repositions to the brief title field. You can enter another brief or, if finished entering briefs, press return. You will now be at the top of the User block. Enter your user data.

Step 5. After entering your user data, you are presented with the Weapon block. Enter the data for the first weapon. Following the pinger channel entry, the cursor will reposition under the first weapon entered. Continue entering data for all weapons scheduled. Pressing return on an empty "Type of Weapon" field will return you to a blank User block. You have the option of entering another user or nothing. If you entered all your users then enter nothing and move to the target block.

Step 6. Enter your target data. When finished you will move into the Comments block. Enter your comments, pressing return twice when finished. All data entered is stored and you are returned again to the first screen.

4. Modify Procedures:

Modifying an existing entry is straightforward. First, retrieve (see Querying the Database) the event to the screen, then change or add data as if you were entering data for the first time. The exception to this procedure is that you can not change exercise or event numbers. To enter a new brief or user you must either select Create Record<F9> or Next Field <enter> until a blank record appears on the screen. To add a weapon to an existing command go to the User block and select Next Record <down arrow> until the desired user name appears. Then use Next Field <enter> to move to an blank weapon line and enter the information. To add an additional target, go to the Target block and select Next Record <enter> or Create Record <F9>, and enter the information. To add additional comments just add them to the previous comments. Note however, blank lines are not allowed. If you want to separate comments, use some keyboard symbol, such as "*", "-", or "=" on a line to separate them.

5. Delete Procedures:

Delete works on many levels: you can delete an entire event or any of its various objects (Brief, Users, etc.).

To delete an entire event you must first be in the Exercise block then retrieve the desired record as described in the next section. Once the desired event is displayed select Delete Record <shift F5>. This will delete the entire event including any Briefs, Users, Targets and Comments associated with the event.

Any record in the other blocks can be deleted in the same manner. First, display the record to be deleted, then select delete record. When deleting a User the Weapons associated with that User are also deleted. In the comments block selecting delete record will only delete **one line** at a time.

6. Query Database:

The ability to query the database in this application is limited. In all blocks except the Exercise block queries are constrained by the exercise type and event number displayed. For example, if you are in the Brief block, the only records retrieved in response to a query will be those associated with the exercise type and event number displayed at the top of the block. Even with this limitation many useful queries may be done.

The easiest query to perform is a **general query.** This retrieves all records. To do this you must be in the Exercise block. Then select Execute Query <F2>, which will

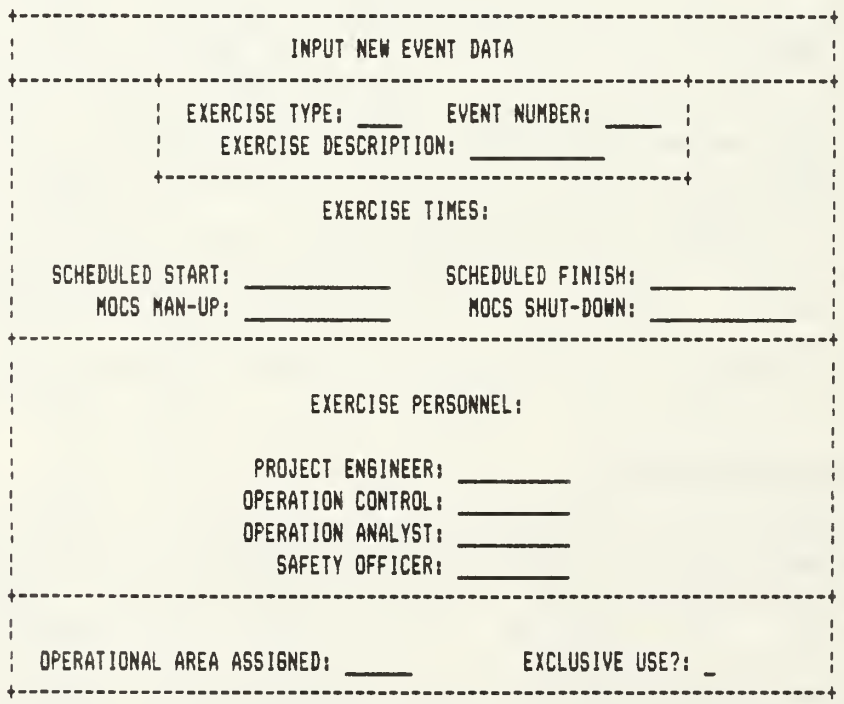
retrieve all events. They may then be viewed sequentially by selecting Next Record <down arrow>.

The other type of query is a **selected query**, through which you retrieve records that satisfy certain selection criteria (For example, exercise type = "Torpex"). This is also done from the Exercise block. Select Enter Query <F1> and enter the selection criteria into the fields that you wish to query, then select Execute Query <F2>. One example would be to query all data relevant to a particular exercise. The procedure would be: (1) Enter Query <F1>, (2) enter the exercise type and the event number, and (3) select Execute Query <F2>. This would either retrieve the record or say no record selected, in which case you can enter another query. More complex queries are possible and are described in the SQL*FORMS Operator's guide chapter 11.

7. Detailed Field Descriptions:

This section provides a quick reference on each field and shows the screen layouts.

Exercise Block (Page 1):



Fields:

Exercise Type: Enter the type of exercise to be scheduled. List Values <F4> can be used to review standard exercises. This field is mandatory.

Event Number: In this field the only input allowed are the last two digits of the year in which the exercise will occur. Once this data is entered, the proper event number is automatically generated. This field is mandatory.

Exercise Description: This field is automatically filled in based on the exercise, but may be changed to fit the actual exercise needs.

Schedule Start: Enter the schedule start time in standard military date-time group format DDHHMMZ MONYY. Where DD is the day of the month, HHMM is military time, Z is the time zone (San Diego is U time), MON is the three letter abbreviation for the month, and YY is the last two digits of the year. Entering the wrong format will cause an error message to be displayed. To get more information on the error Display Error <shift-F10>.

Scheduled Finish: This is the scheduled stop time for the event. It has to be in the standard format described above.

MOCS Man-up: This is the time that the MOCS should be manned up. The default is one hour before the scheduled start time. This must be in standard format DDHHMMZ MONYY.

MOCS shut-down: This is the time scheduled to shut down the MOCS. The default is one hour after scheduled finish. This is also entered in standard format.

Exercise Personnel: These four fields are used to indicate the personnel scheduled for the event. You may enter either initials or up to 10 characters of their name.

Operational Area: The scheduled operational area of the event.

Exclusive Use: This Y/N field indicates if the operational area is reserved exclusively for the exercise.

Exercise Block (Page 2):

Fields:

Exercise, Event: These fields are are replicated from the first page and cannot be entered.

Tracking Type: The type of tracking required for the event. Enter E for EATS tracking, I for in-water or B for both.

Green Required: Is a rainform green message required. Enter either Y or N. If one is not required, the following Green Sent field is skipped.

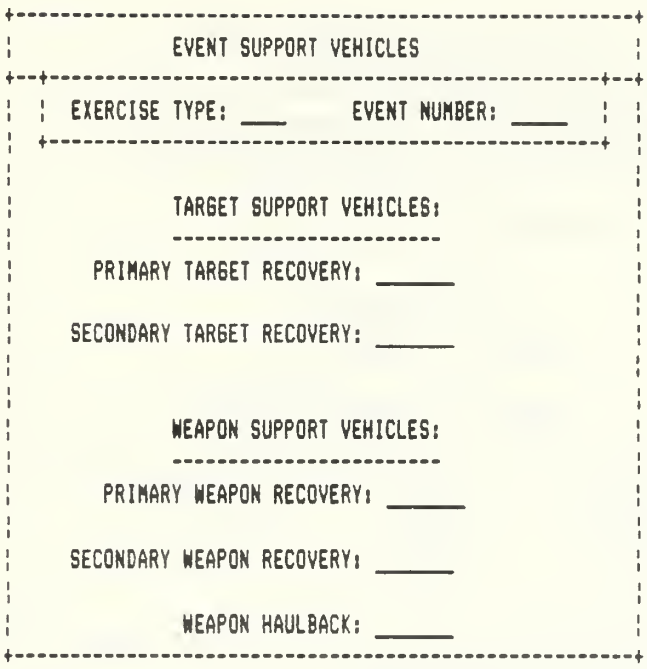
Green Sent: This field defaults to N and should be changed to Y when the required rainform green message is sent.

Submarine Relaxation: This is used to indicate if a submarine relaxation message is required, either Y or N.

Air Space Restrictions: This field states the altitude limits for aircraft involved in the event. The heights are in hundreds of feet with the low altitude first. For instance if the allowable altitude was 0 to 5000 ft the entry would be 00-50.

Communications: This is the primary frequency for communication during the exercise, usually UHF.

Exercise Block (Page 3):

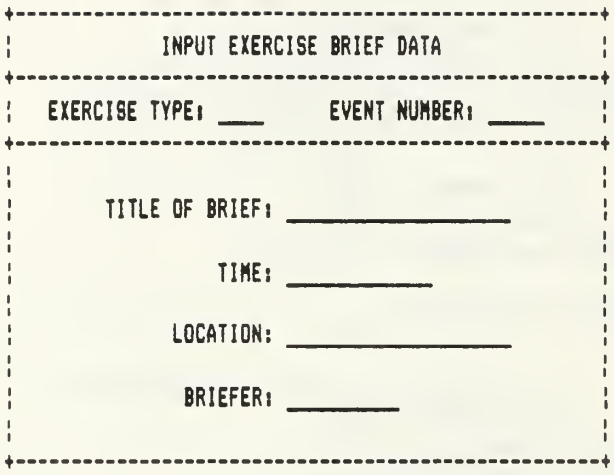


Fields:

Exercise, Event: These fields are replicated from the first page and cannot be entered.

Recovery Vehicles: These five fields are for listing the primary and secondary vehicles scheduled to provide support to the event. In each field enter the name of the command that will provide that support. List Values <F4> may be used to list commonly used commands. After weapon haulback is entered you will move to the Brief Block.

Brief Block (Page 4):



Fields:

Exercise, Event: These fields are replicated from the first page and cannot be entered.

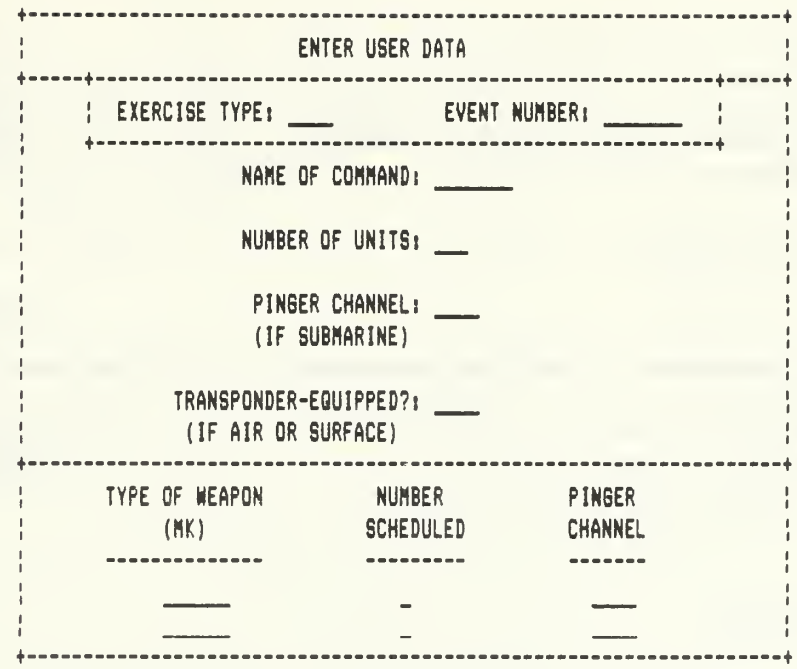
Title of Brief: Enter the title of the brief. Leaving this field blank will move you directly to the User Block.

Time: Enter the scheduled time of the brief in standard date-time group format DDHHMMZ MONYY. See Exercise block scheduled start field for details of the date-time format.

Location: Enter the location where the brief will be held.

Briefer: Enter the Name of the person who will give the brief. After entering this field you will move back to the Title of Brief field, allowing you to enter another brief.

User Block (Page 5):



Fields:

Exercise, Event: These fields are replicated from the first page and cannot be entered.

Name of Command: Enter the name of the command, using command designations (ie VP-44, SSN-680). If you leave this field blank the system assumes that you have entered all the commands for this event and moves you to the Target Block.

Number of Units: This field is entered only if the command is an aircraft squadron. Enter the number of aircraft from this command that will participate in the event.

Pinger Channel: This field is entered only if the command is a submarine. Enter the pinger channel to be installed on the sub. From this field you move directly to the Weapon block on the same page.

Transponder Equipped: This applies only to ships and aircraft. Enter the type of transponder to be installed. After entering this field you move to the Weapon block on the same page.

Weapon Block:

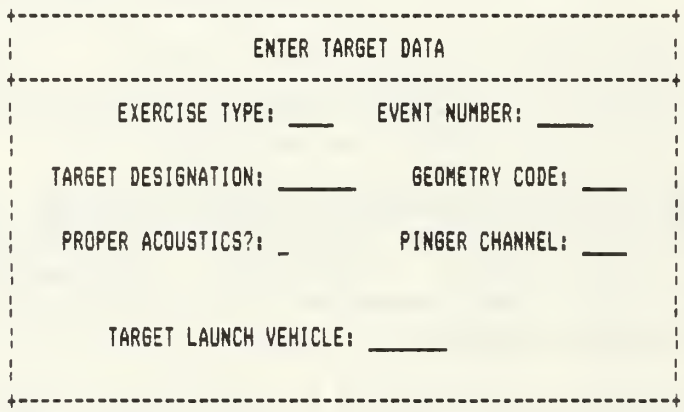
Fields:

Type of Weapon: Enter the type of weapon scheduled for this command. Leaving this field blank will move you back to the user block allowing you to enter another command.

Number Scheduled: Enter the number of weapons of this type scheduled.

Pinger channel: Enter the pinger channels to be used by the weapons. If four weapons are scheduled, two with A pingers and two with B pingers, then enter 2A2B. After entering this field you will move back to Type of Weapon field allowing another type of weapon to be scheduled for this user.

Target Block (Page 6):



Fields:

Exercise, Event: These fields are replicated from page 1.

Target Designation: This field contains the designation of the target. If the target is a ship or submarine the designation is just its command. If it is a mechanical target, enter its MK number. If the target is a ship or submarine, the remainder if the block is not applicable, and you will move directly to the Comment block.

Geometry code: Enter the geometry programmed into the target.

Proper Acoustics: Verify that the target has the proper acoustics, either Y or N.

Pinger channel: Enter the pinger channel to be used by the target.

Target Launch Vehicle: Enter the command that will launch the target. After entering this field you will move to the Comments Block.

Comments Block (Page 7):

Fields:

Comments: This field allows you to enter any comments pertaining to the event. You may use as many lines as necessary. To move to the Next Line select enter <cr>. To move to the Next Block select enter <cr> twice. You will then be at the top of the form in the Exercise block.

PART II RESULTS

1. Introduction:

This application stores the data recorded during the event so that it can be reviewed and analyzed later. It also allows the user to query and generate reports on the stored data. As with the schedule application, it was designed to minimize the effort required for data entry. The same <enter> key will move you through the entire form. Before an event can be entered it must first exist in the Schedule application, ensuring that data can pass between the two applications. This application is much larger that Schedule and has more blocks, but should be no more complex to operate.

2. Form Description:

The form contains 13 blocks on nine screen pages. The blocks are Result, Cancel, Launch/Recovery, User, Scheduled Weapons, Attack, Attack Comments, Weapon, Target, Unclassified Comments, Classified Comments, and Lost.

The Result block is the first and master block. It contains the exercise type and event number, along with the oparea, comex, finex and weather information. This is the only block from which you can query multiple events.

The next two blocks, Canceled and Launch/Recovery, are also on page one. Canceled is for entering reasons why part or all of an event was canceled. The Launch and Recovery block records whether or not a scheduled recovery vehicle was used. Both of these blocks are multi-record blocks, showing up to three cancellations and four recovery vehicles at once. As in all other multi-record blocks entering nothing moves you to the next block.

On page two are the User and Scheduled Weapon blocks. The User block records the actual platform that was on the range. From this block, you move into the Scheduled Weapon block which is a multi-record block.

The Attack block on page three is one of the most important because it records all the attack data for the command in the User block. This block covers two pages and leads directly into Attack Comments. These comments go directly with the attack described above it.

Moving to page five, we start to see the complex navigation controls of this application. The path so far has moved directly through the form. Attacks can involve actual or simulated weapons. If the attack was simulated you will return to the Attack block, allowing you to enter another attack. Otherwise you **may** enter Weapon data, which, upon completion, will also bring you back to the Attack block. If there are no more attacks conducted by this platform you will return to the User block were another platform may be

entered. If all users for an event have been entered you move on to the Target block.

The Target block covers information on the target. Once this is entered you will move to the event Comment blocks. The first is for general comments on the exercise, while the second is for any comments that are classified.

The last block is the Lost block for recording information on lost weapons or targets. The only way to get to this block is for a loss to be recorded in either the Weapon or Target blocks. Upon leaving this block, you will either return to the Attack block (if the item lost was a weapon), or to the Unclassified Comments block (if the item lost was a target).

3. Add Procedures:

This section explains how new data is entered into the system. This is a general description of the process and should be used in conjunction with the detailed field descriptions provided below. Before entering new data you should have the exercise summary at hand.

Step 1. Start at the top of the form (If not at top of form, select Previous Block <page up> until you get a message saying "top of form" on the status line). Select Create Record <F9>, which sets up the form to enter a new record.

Step 2. Enter your exercise type. Next enter the event number. Once these items are entered you can select Duplicate Record <F7>, which will copy pertinent data from the schedule into the Results form (this may take 10 to 15 seconds to complete). You can now edit or accept the values copied over from the schedule.

Step 3. Continue to enter data until you get to the Canceled block. Here, if no cancellation occurred, leave blank and move to Launch and Recovery assets.

Step 4. You need to edit the Launch and Recovery values copied from the schedule. If the platform was not available, delete it using Delete Record <shift-F5>. The side numbers have to be changed to match the actual side number. When finished, select Next Field <enter> until you move to the next block.

Step 5. You are now in the User block. Enter your user data, moving automatically into Scheduled Weapons. When you finish entering the scheduled weapons you will move to the Attack block.

Step 6. Enter your attack data and attack comments. Once this is complete you will move to the Weapon block. If no weapon was fired leave blank, otherwise enter the information (if a weapon was lost see step 8). In either case you will return to a blank Attack block. You may enter another attack for the displayed platform, or leave blank. Leaving the field blank returns you to the User block. Again you can enter another user or leave blank. Leaving the field blank takes you to the Target block.

Step 7. In Target block enter the appropriate data (if the target was lost see step 8). When target entry is complete you will move through the Comment blocks and then back to the first page of the application to enter additional exercise results.

Step 8. If you indicated that a weapon or target is **not recovered** you will move automatically to the Lost block. Here you enter data about the loss. Upon completing the block you will exit to the Attack block (if the item lost was a weapon), or to the Unclassified Comments block (if the item lost was a target).

After entering an event the data will be saved and you will return to the top of the form. You can repeat the process and enter another event or perform another operation.

4. Modify Procedures:

Modifying an existing entry is straightforward. First, retrieve (see Querying the Database) the event to the screen, then change or add data as if you were entering data for the first time. The exception to this procedure is that you may not change exercise type or event number. To enter a new User or Attack you must select Create Record <F9> in that block. To add a Cancellation or a Support vehicle, you must go to the desired block and select Next Record <down arrow> until a blank line appears, then enter the information. To add an additional target, go to the Target block and select Next Record <down arrow> or Create Record <F9>, then enter the information. To add additional Comments, just add then to the previous comments. Note, however, that blank lines are not allowed. If you want to separate comments use keyboard symbols such as "*", "-", or "=" to separate them.

5. Delete Procedures:

Delete works on many levels: you can delete an entire event or any of its associated objects. You can only delete an entire event, however, if it has no associated Users or

Targets. This prevents inadvertent deletion of records. This same procedure applies to User. No user can be deleted if an Attack is associated with it.

To delete an entire event perform the following steps: 1) Delete all Attacks associated with the Users of the event (this automatically deletes all Attack Comments); (2) Delete all Users of the event (this automatically deletes all Weapons assigned to the Users); (3) Delete Target(s) associated with the event; and (4) Enter the Result block and select Delete Record <shift-F5>, which automatically deletes all Comments, Cancellations and Support, along with the event itself.

If there are no Users and Targets associated with an event to be deleted, go directly to step (4).

All other blocks can be deleted individually as shown in the SQL*FORMS manual.

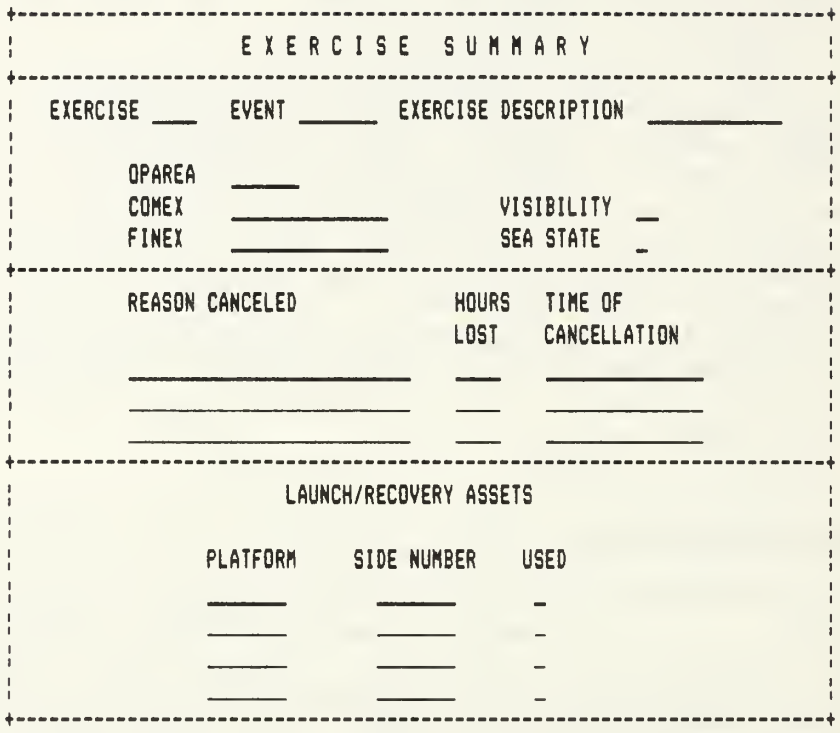
6. Query Database:

The ability to query the database in this application is limited. In all blocks except the Result block, queries are constrained by the exercise type and event number displayed. For example, if you execute a query in the Attack block, the response to the query will pertain to the particular exercise type and event number displayed at the top of the Attack block. Even with this limitation, full queries may be performed.

The easiest query to perform is a **general query**. This retrieves all records. To perform this query, enter the Result block and select Execute Query <F2>. This will retrieve all events which may then be viewed sequentially by selecting Next Record <down arrow>.

The other type of query is a **selected query**, through which you retrieve records that satisfy selected criteria (For example, exercise type = "Torpex"). This query is also executed from the Result block. The general query procedure is as follows: 1) Select Enter Query <F1>; 2) Enter selection criteria into the fields you wish to query; and 3) Select Execute Query <F2>. One example would be to find a particular exercise. After entering the Result block, the procedure would be: 1) Enter Query <F1>; 2) Enter the exercise type and event number; and 3) Select Execute Query <F2>. This will either retrieve the desired record or say "no record selected", in which case, you can enter another query. More complex queries are possible and are described in the SQL*FORMS Operator's guide chapter 11.

Result Block (Page 1):



Special Keys:

Duplicate Record <F7>: This key copies information from the Schedule to the Results application. After entering the exercise type and event number, press this key to copy the oparea, scheduled comex and finex into the appropriate fields. It will also list all the recovery vehicles in the launch/recovery block.

Fields:

Exercise: Enter the type of exercise. (Standard exercise types are available by selecting List of Values <F4>) This field is mandatory, and must exist in the schedule.

Event: Enter the event number. This field is also mandatory, and the event must be in the schedule.

Exercise Description: This field is automatically filled in and cannot be edited.

Oparea: Enter the operational area in which the event took place.

Comex: Enter the date and time of the comex in standard military date time group format DDHHMMZ MONYY. Where DD is the day of the month, HHMM is military time, Z is the time zone (San Diego is time zone U), MON is the three letter month abbreviation and YY is the last two digits of the year. If this format is not used an error message will appear; select Display Error <shift-F10> to get a description of the error.

Finex: Enter the finex time of the event in the same format as above.

Visibility: Enter the visibility in nautical miles. Enter 99 to indicate unlimited visibility.

Sea state: Enter the single digit representing the sea state.

Canceled Block:

Fields:

Reason Canceled: This is the reason for which part or all of the event was canceled. There are six valid entries: asset availability, fouled range, instrumentation, weather, no air tracks, and no show. These values are available using List of Values <F4>. Making no entry moves the cursor to the Launch/Recovery Block.

Hours lost: This field records the length of the cancellation period. This data is recorded in hours and tenths of hours.

Time of Cancellation: Enter the time at which the cancellation started. The format is the standard date-time group format of DDHHMMZ MONYY. See comex in the result block for more details. Once this is entered you will move to enter the next reason canceled.

Launch/Recovery Block:

Fields:

Platform: Enter the command name of the support vehicle. If Duplicate Record was selected in the Result block the command name will be filled in from the schedule. If the schedule information was incorrect, select Delete Record <shift-F5> to delete the line. If this field is left blank you will move to the User Block.

Side number: Enter the side number of the vehicle. The values copied from the schedule have the letters A, B, C, and D. Insert the correct side number.

Used: A Y/N entry indicating whether or not the vehicle was actually used to support the event. If it stayed in port or on the ground the answer is N. If the vehicle was broken or not available then it should not be listed. After entering this field you will move to the next platform in the list.

User Block (Page 2):

```
                        U S E R   D A T A
+-------------------------------------------------------------------+
| EXERCISE ___ _____                                                |
+-------------------------------------------------------------------+

      COMMAND DESIGNATION _______     SIDE NUMBER _____

      SHOWED FOR EXERCISE _           TRACK QUALITY __

      SONOBUOY USAGE: LOFAR __
                      DIFAR __
                      DICAS __
                      VLAD  __

            WEAPON TYPE     NUMBER        REASON
                            SCHEDULED     NOT DROPPED

            ____            ___           -
            ____            ___           -
            ____            ___           -
            ____            ___           -
```

Fields:

Exercise: This field is replicated from the exercise type and event number fields of the Result block and cannot be entered.

Command Designation: The name of the command using the range. The name is the standard Navy designation for the command (ie VP-44 or SSN-680). For consistency include the hyphen. If this field is left blank, the system assumes you have entered all the commands involved in the event and you move to the Target Block.

Side number: This field is only entered if the command was an aircraft squadron. Enter the side number of the actual aircraft that used the range. If a squadron was scheduled for two aircraft and one did not show enter a NS for no show.

Showed for exercise: A Y/N entry indicating whether or not a scheduled user showed up for the event.

Track quality: Enter the quality of the track observed by the range, from 0 (no track) to 100 (a perfect track). After entering this field aircraft move to the sonobuoy field; all others go directly to Scheduled Weapons.

Sonobuoy Usage: These four fields record how many buoys an aircraft uses. Enter the number of buoys used for each type. When exiting the last field, you will move to the Weapon block.

Weapon Block:

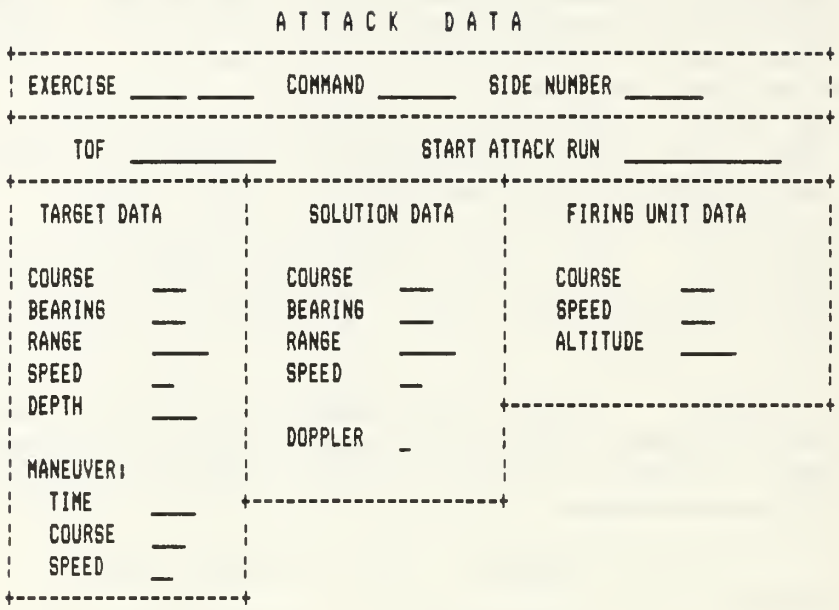
Fields:

Weapon type: Enter the type of weapon scheduled, either MK-46 or MK-48. The system will search the Schedule and copy the number scheduled into the appropriate field. If this field is left blank, you will move to the Attack block.

Number scheduled: This field records how may weapons were originally scheduled. The total number of weapon type scheduled for a command is copied into this field. For aircraft squadrons, this number needs to be verified because the weapons may have been divided equally among all platforms.

Reason Not Dropped: A code indicating why all scheduled weapons were not dropped. The codes are: A) platform problems, B) torpedo problems, C) weather, D) inadequate recovery assets, E) time constraints, F) fouled range, G) inadequate TMA, H) pinger problem, and I) other. After entering this data you will be able to enter the next weapon scheduled for this platform.

Attack Block (Page 3):



Fields:

Exercise: Replication of exercise type and event number.

Command: The command that conducted the attack.

Side number: The side number of the platform that performed the attack (if applicable).

TOF: Time of Fire. The time that the weapon was launched. This identifies the attack. The time must be entered in standard military date-time group format DDHHMMZ - MONYY . See Result block comex for more information on date-time format.

Start Attack Run: Enter the time at which the platform starts searching for the target. This also has to be entered in standard date-time group format DDHHMM MONYY.

Target Course: Enter the course of the target at TOF [recorded in degrees true (0-359)].

Target Bearing: Enter the true bearing from the platform to the target at TOF (0-359).

Target Range: Enter range from platform to target at TOF in yards.

Target Speed: Enter the speed of target at TOF in kts.

Target Depth: Enter the depth of the target at TOF in feet.

Maneuver time: The time in minutes after TOF at which the target maneuvered. The time is recorded in minutes and tenths of a minute. Enter 0 if no maneuver after TOF. Enter 0.1 if maneuver occurred at TOF. If 0 is entered the maneuver course and speed are skipped.

Maneuver course: The new course after the maneuver [recorded in degrees true (0-359)].

Maneuver speed: The new speed of the target in kts after the maneuver.

Solution Course: The firing solution course [measured in degrees true (0-359)].

Solution Bearing: The firing solution bearing (0-359).

Solution Range: The firing solution range in yards.

Solution Speed: The firing solution speed in kts.

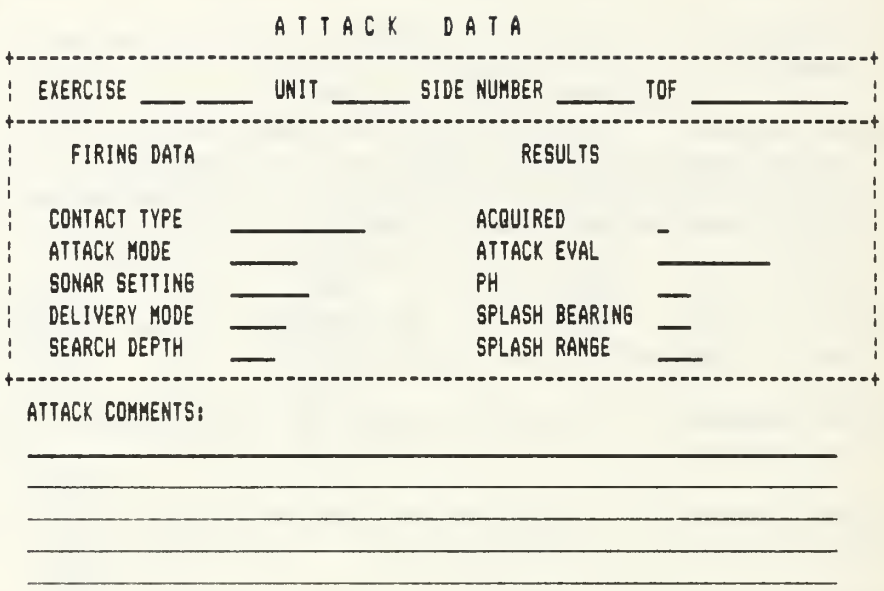
Doppler: A code entered to describe the amount of target doppler the firing craft was reading. The codes are: 1) doppler > +5 kts, 2) doppler between +2.5 and +5 kts, 3) doppler between -2.5 and +2.5 kts, 4) doppler between -2.5 and -5 kts, 5) doppler < -5kts.

Firing Unit Course: Course of platform at TOF [measured in degrees true].

Firing Unit Speed: Speed of platform at TOF.

Firing unit Altitude: Altitude of aircraft at TOF. This field is skipped for ships. After entry you will move to the next page and continue entering attack information.

Attack Block (Page 4):



Fields:

Exercise, Unit, side number, TOF: These fields are not entered; replicating earlier recorded data.

Contact Type: Enter the sensors used to develop the firing solution. There are 13 legal values which can be viewed using List Values <F4>.

Attack Mode: Enter how the torpedo was programmed to perform its attack (either circle or snake).

Sonar Setting: Enter the type of sonar the torpedo used. There are four settings available and may be viewed using List Values <F4>.

Deliver Mode: Enter how the weapon was launched. There are six different delivery modes which may be viewed using List Values <F4>.

Search Depth: The depth at which the weapon starts its search, in feet.

Acquired: How many times did the weapon acquire the target. If it did not acquire enter 0, If it acquired the target more than nine times enter 9.

Attack Eval: Evaluation of the attack. There are five legal values, HIT, MISS, PROB HIT, PROB,MISS, UNKNOWN. These values are also available using List Values <F4>.

If the platform that launched the attack was not an aircraft you will automatically skip to Attack Comments Block.

PH: Enter the decimal value of the Probability of Hit (0.00 to 1.00).

Splash Bearing: The relative bearing from the target to the splash point (0-359).

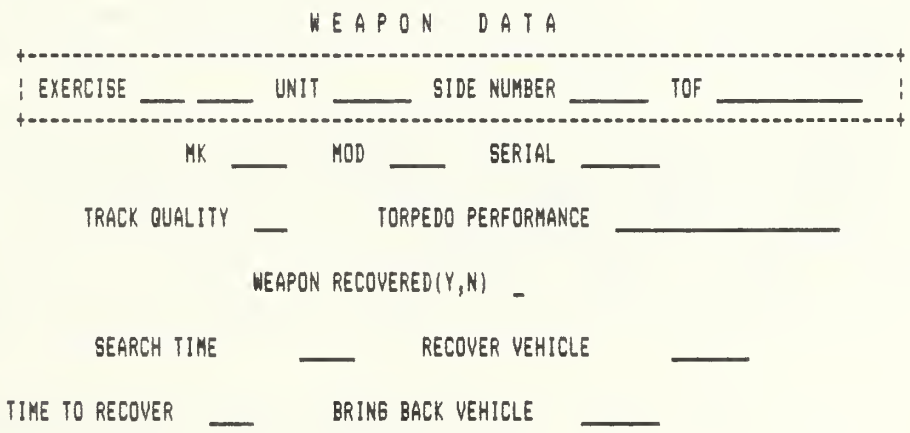
Splash Range: Range from target to splash point, in yards. After entering this field you will move to Attack Comments Block.

Attack Comments Block:

Fields:

Comments: This field allows you to enter comments that pertain to the specific attack shown at the top of the screen. Select return at the end of each line to move to the next line. Selecting return twice will move you to the Weapon Block.

Weapon Block (Page 5):



Fields:

Exercise, Unit, Side Number, TOF: These fields are not entered, but are replicated from earlier data.

MK: Enter the MK of the weapon, enter MK-48, MK-46 or any other weapon used. If no weapon was launched as in a simulated attack, leave blank and you will return to the attack block to enter another attack.

MOD: Enter the mod of the weapon.

Serial: Enter the serial number of the weapon (up to seven characters long).

Track Quality: Enter the quality of the weapon track from 0 to 100.

Torpedo performance: Enter the performance of the weapon. There are six legal values which may be selected by using List of Values <F4>.

Weapon Recovered: This field indicates if the weapon was recovered or not. If N is entered, you will move directly to the Lost block. If Y is entered, you will continue entering data in this block.

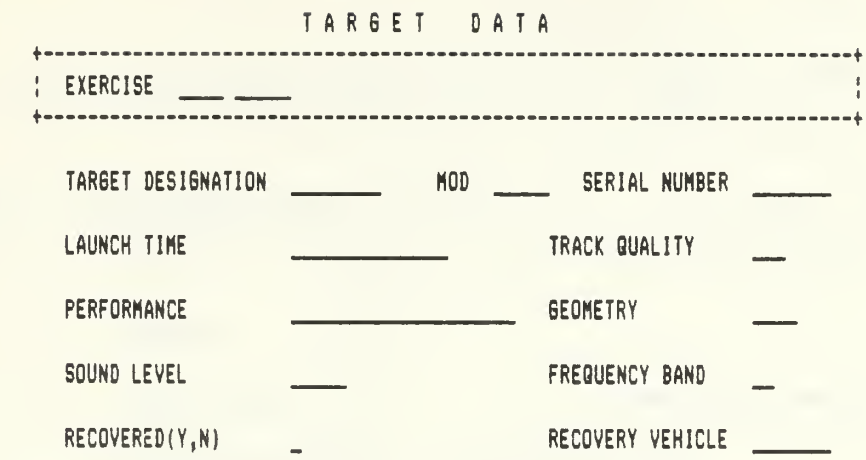
Search Time: Enter into this field the number of seconds that the weapon was in the search mode.

Recover vehicle: The vehicle that picked up the weapon (i.e., TWR-789 or HC-1 345).

Time to Recover: Enter the length of time between when the weapon stopped running and when it was retrieved. Measured in minutes.

Bring Back Vehicle: The vehicle that returned the weapon to San Diego. After entering this field you will move back to the attack block to allow entry of another attack by this platform.

Target Block (Page 6):



Fields:

Exercise: This field is not entered, but replicates exercise type and event number.

Target Designation: If the target is a ship or submarine, enter its command name. For a mechanical target enter the MK. If a ship or submarine is entered the remainder of the block is not applicable, and you move to the Comments blocks.

Mod: Enter the mod of the target.

Serial Number: Enter the serial number of the target.

Launch time: Indicate the target launch time in standard date-time group format DDHHMMZ MONYY. See the Comex field in the Results block for more information on the date-time format.

Track quality: Enter the quality of the target track during the event (0 -100).

Performance: Enter the target performance. There are six legal values which may be viewed by selecting List Values <F4>.

Geometry: Enter the geometry that was used by the target.

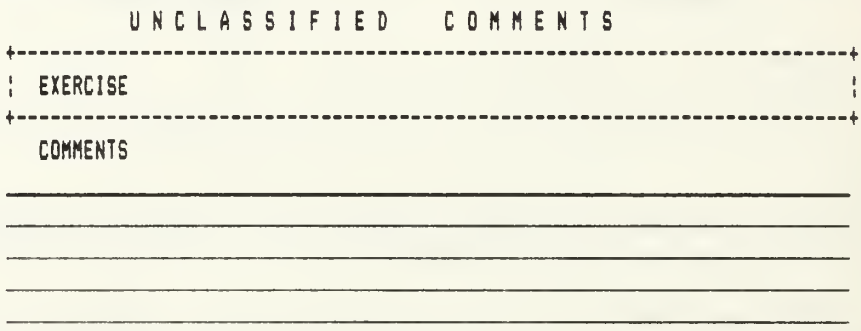
Sound Level: Enter the average sound level generated by the target (measured in DB).

Frequency Band: Enter the type of sound generated by the target. The two legal values are NB for narrow band and BB for broad band.

Recovered: This is a Y/N field indicating if the target was recovered. If it was not recovered, you will move to the Lost block.

Recovery Vehicle: The vehicle that recovered the target. After entering this field you will move to the Unclassified Comments block.

Unclassified Comments Block (Page 7):



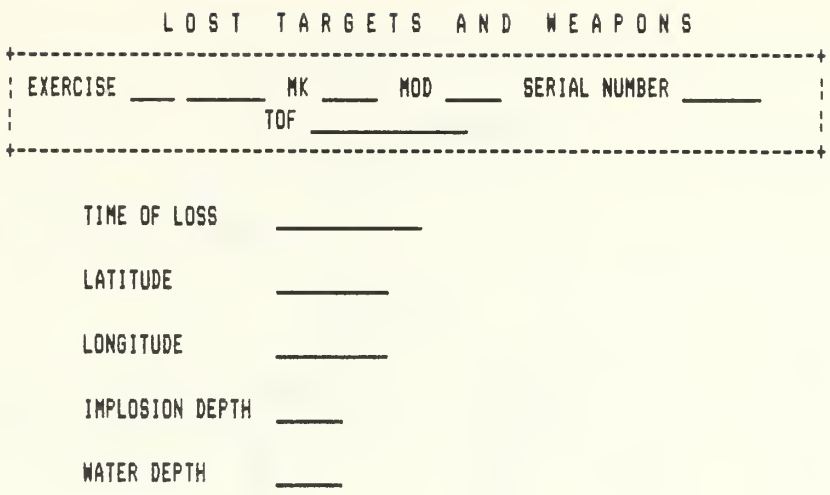
Fields:

Comments: Enter general comments about the event. The comments may be as many lines as needed. Use <Enter> to move to the next line. Pressing <Enter> twice will move you to the Classified Comments block.

Classified Comments Block (Page 8):

This block is identical to Unclassified Comments but is for classified comments. Selecting <Enter> twice will move you back to the top of the form (Result block).

Lost Block (Page 9):



Special Keys:

Previous Block <page up>: This will return you to the block from which you came (Weapon or Target).

Next Block <page down>: This will save the data in the Lost block and move you back to Attack (if the item lost was a weapon), or to the Unclassified Comments block (if the item lost was a Target).

Fields:

Time of Loss: Enter the time that the loss occurred in standard date-time group format DDHHMMZ MONYY. This field also has special definition for the Previous Field <shift-tab> key. If you enter Previous Field <shift-tab> the system assumes that you made a mistake and deletes the loss and moves you to the block from where you came. If you leave the field blank, you will also return to the block from where you came.

Latitude: Enter the latitude where the loss occurred.

Longitude: Enter the Longitude where the loss occurred.

Implosion depth: Enter the depth at which it imploded, in feet (if unknown, enter 0).

Water Depth: Enter the depth of the water where the loss occurred (in feet). After entering this field you will either return to the Attack block or advance to the Unclassified Comments block.

APPENDIX L

SAMPLE REPORTS

A. Sample Brief Reports

BRIEF REPORT

TITLE	DATE	TIME	LOCATION	BRIEFER
PRE			AUD	ME
AUD			HERE	ME
PRE			A122	ME
PRE			A122	ME
POST	12 MAR	1900	IS-300	ME

BRIEF REPORT

TITLE	DATE	TIME	LOCATION	BRIEFER
PRESAIL	06 JUN	1100	AUD	YOU
PRE			AUD	ME
AUD			HERE	ME
PER-BRIEF			AUD	HIM
PREBRIEF	03 MAR	1700	AUD	PJD
POST-SAIL			SHIP	DR
PRE			A122	ME
POST			I-322	DR
PRE			A122	ME
POST			AUD	YOU
THESIS			HERE	DJR
POST	12 MAR	1900	IS-300	ME

B. Sample Weekly Schedule

WEEKLY SCHEDULE

EXERCISE	TITLE	COMEX-FINEX	OPAREA	PERSONNEL PE OC OA SO	TRACKING EATS	TRACKING I/W	SUPPORT VEHICLES PRITGT	SUPPORT VEHICLES SECTGT	SUPPORT VEHICLES PRIWEP	SUPPORT VEHICLES SECWEP
MONDAY 13 MAR 89										
A612 89082	TORPEX	131200-131700	SOAR	A /B /C /D	X	X	TWR	TWR	HC-1	HC-1
A601 89001	TORPEX	131900-132200	AREA1	/ / /	X	X	T	T	H	H
TUESDAY 14 MAR 89										
A601 89002	TORPEX	140700-141855	AREA1	A /B /C /D	X	X	HC1	HC-1	TRW	TWR
A601 89004	TORPEX	141300-081600	AREA1	/ / /	X	X	H		TC	TBY
WEDNESDAY 15 MAR 89										
A612 89083	TORPEX	151400-141800	SOAR	FJ/HN/PD/DR	X	X	HC-1	TWR	HC-1	TWR
THURSDAY 16 MAR 89										
A601 89005	TORPEX	160730-161300	CAST1	WW/RD/TW/RT	X	X	HC-1	TWR	HC-1	TWR
FRIDAY 17 MAR 89										
M000 89001	MAINTENANCE	171230-171700	SOAR	M&/M / /						

LIST OF REFERENCES

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